April 2024 No. 309

Fine WoodWorking

Teach • Inspire • Connect

- Comfy outdoor chair
- Paint like a pro
- Guide to wood grain
- Shopmade hardware
- Carving basics

Tansu chest, p. 52

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MARCH/APRIL 2024 ■ ISSUE 309

features

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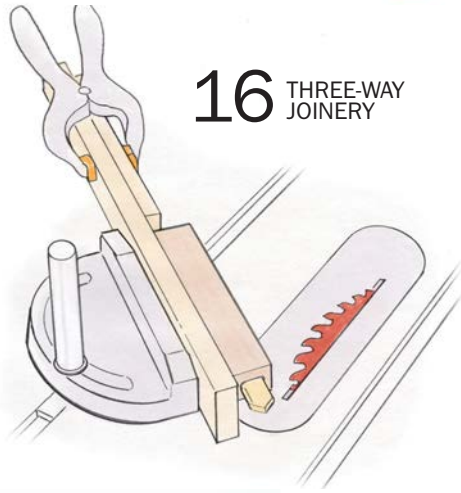
Cover photo: Jonathan Binzen

in every issue

69 GALLERY: LOWBOY



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VIDEO

Design discussion

In this video, furniture maker Evan Court (p. 62) breaks down his design process, showing you the steps he takes as he brings an idea to life.

ONLINE ARTICLE

Curved panels

In this article, David Haig (p. 24) not only covers how he makes the kerfed, curved, tapered panels of his furniture but also how he covers the edges to hide the kerfing cuts.

BLOG

File away

Len Cullum has the blanks for his tansu hardware (p. 72) cut with a water jet. Thankfully, he shared his files with us so you can send them to a fabricator and do the same.

BLOG

Table to match

Asa Christiana designed a simple side table to accompany his chair (p. 30), assembled in much the same way.

BLOG

Practice, then carve

Drawing the acanthus leaf (p. 44) helps you practice the leaf before putting a gouge to wood. In this blog, Mary May teaches you how to do it.

VIDEO WORKSHOP

Replicating a legend's side chair

Dan Faia painstakingly documents and builds a replica of a Queen Anne chair made in the 1980s by one of his mentors, Phil Lowe. In this series, you'll learn how to:

- Extract information from a museum piece and create exacting full-size plans
- Create strong mortise-and-tenon joinery on a complex form
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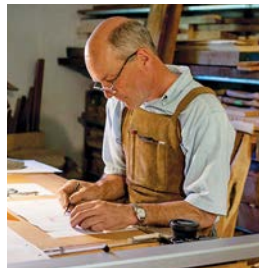
contributors

Carving has been a passion for Mary May ("Carve an Acanthus Leaf") for more than 30 years. In fact, she wrote the book *Carving the Acanthus Leaf* (2017, Lost Art Press) on the exact subject of her article. This craft grabbed her attention during a trip to Europe in college, and she went on to study under master carver Konstantinos Papadakis. After studying in Greece and England, she returned to the U.S., taking carving jobs wherever she could find them. Eventually, in 2012, knowing the value of in-person classes, she started Mary May's School of Traditional Woodcarving.

Len Cullum ("Traditional Tansu") works wood in the shop he built behind his house in the Beacon Hill neighborhood of south Seattle. He also works on site around the region building Japanese-style outdoor structures ranging from tea houses to footbridges. Self-taught as a woodworker, he gleaned much about tansu while repairing vintage ones for an antique dealer. His current project at home is building a ceramics studio in the backyard for his wife, Tina Pepa.



David Haig (Designer's Notebook) was born in Malaysia, where his father was a teacher in the British Colonial Education Service. When David was 5, his family moved to England. Changing direction after completing a history degree at Oxford University, he moved to New Zealand and began developing his craft as a woodworker. Starting with antique restoration gave him the opportunity to see different styles of furniture and construction and methods of repair. In 1983 he attended courses run by woodworking luminaries James Krenov and Alan Peters (brought to New Zealand by the then Crafts Council), which opened his eyes to the possibilities of the wide field of studio furniture making. He finds the challenges and the rewards of woodworking to be intertwined. The rewards are commensurate with the degree of challenge, so making difficult things well is both challenge and reward.

Peter Galbert ("Understanding Grain"), author of *The Chairmaker's Notebook*, makes chairs and tools and teaches chairmaking in Rollinsford, N.H. Over the past 20 years he has worked in a string of extraordinary workshops: a timber-frame he built in New York, a carriage house he renovated in Massachusetts, and a former textile mill in New Hampshire. These days, he's renovating a timber-frame cape, built circa 1790, in Berwick, Maine, and he'll soon be renovating the old horse barn beside it as his new workshop.

We are a reader-written magazine. To learn how to propose an article, go to FineWoodworking.com/submissions.

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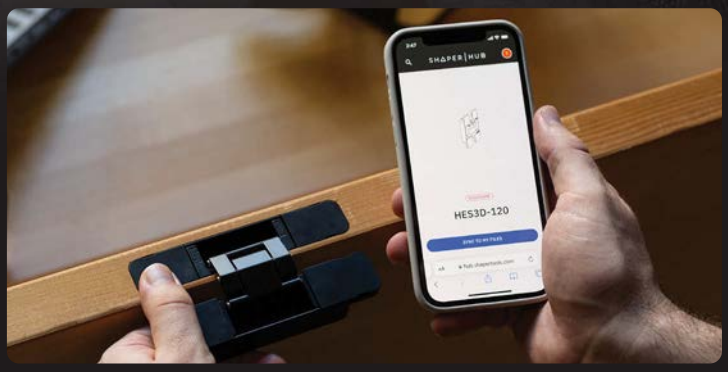

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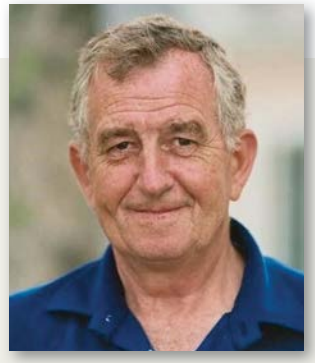
letters

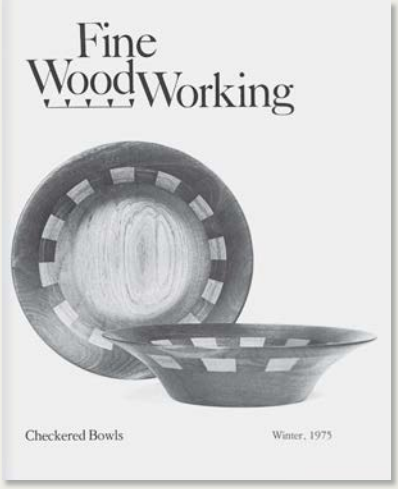
From the Editor



Paul Roman 1931–2024

It is March 1975, and your boss calls you into his office. You are 44 and you've got $2,800 in the bank. You and your wife, Janice, have five children. You work as a speechwriter at General Electric: a good job, but you've been unhappy in the corporate culture for years. To get farther from New York City, you are building a house on Taunton Lake Road in Newtown, Conn. You designed the house and are acting as general contractor. The sheetrock is due to be delivered today. Your boss says he's sorry, but you will be losing your job at GE. As you begin to take in what he is saying, it occurs to you about the sheetrock—should you cut the order in half? No, you decide, let them deliver it all.

What do you do next? If you are Paul Roman, you start a magazine. Over the following eight months, Roman, a hobbyist woodworker long frustrated with the dearth of information available on the subject, designed the DNA of *Fine Woodworking* magazine and got issue #1 edited, photographed, laid out, and shipped to the printer by the end of November. The choices he made for that first issue are still guiding the magazine 49 years later.



To guarantee it had the most authentic possible information, he decided the magazine would be reader-written. He traveled widely to track down the best woodworkers he could find and recruit them as authors. He wanted his magazine to be archival, something his readers would keep for the value of its information but also for its look and feel, so he chose high-quality paper and printing. After settling on the name, he designed the dovetails logo.

The first issues of *Fine Woodworking* were assembled in the attic of that new house—and then, when that proved too small, the basement—with Paul and Jan working with a handful of people hired locally and, after school, a couple of their older kids. The magazine instantly struck a spark, and as its circulation climbed quickly, the staff soon outgrew the house.

By the mid-1980s, a venture that Paul Roman had hoped would succeed well enough to support his family had spawned three sibling magazines and a bustling book department and had several hundred employees. Paul and Jan found themselves managing a good-sized publishing company, and they ran it day-to-day for 25 years.

The commitment to quality and authenticity—and to the readership—that came naturally to Paul formed *Fine Woodworking*'s character as a magazine and made it a deeply rewarding place to work. We are indebted to Paul for that.

—Jonathan Binzen

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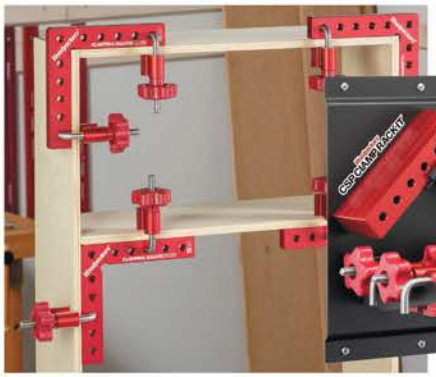

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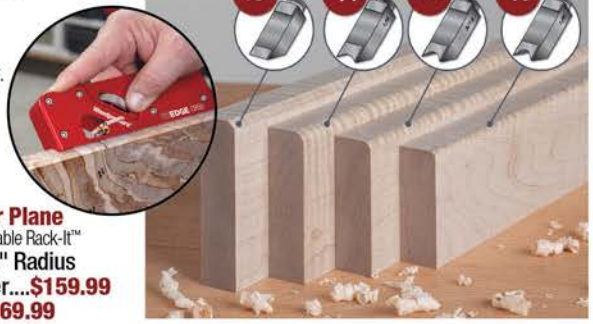

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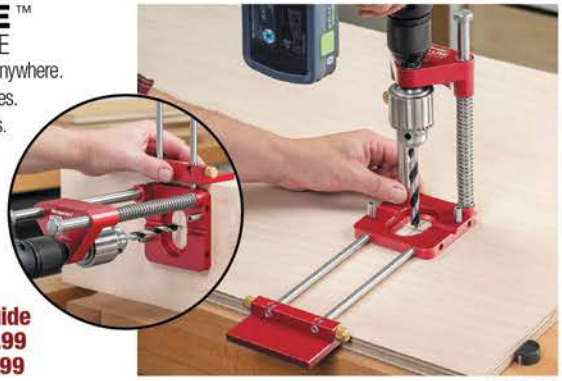

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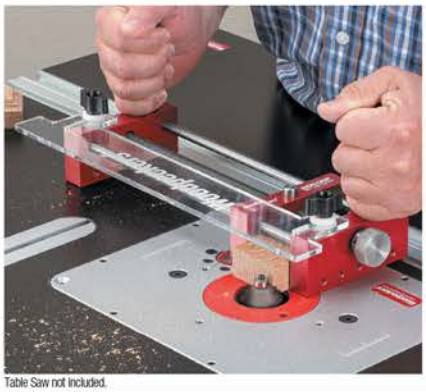

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workshop tips

Build a workbench around a mechanic's tool chest

I made a really solid workbench by using a steel tool chest as the foundation. This was much easier than building a traditional base with a shopmade cabinet. The tool chest is the Husky brand from Home Depot, but there are lots of similar models on the market. Mine came with casters, a wood top, and a multiple-plug outlet on one side, which is very handy.

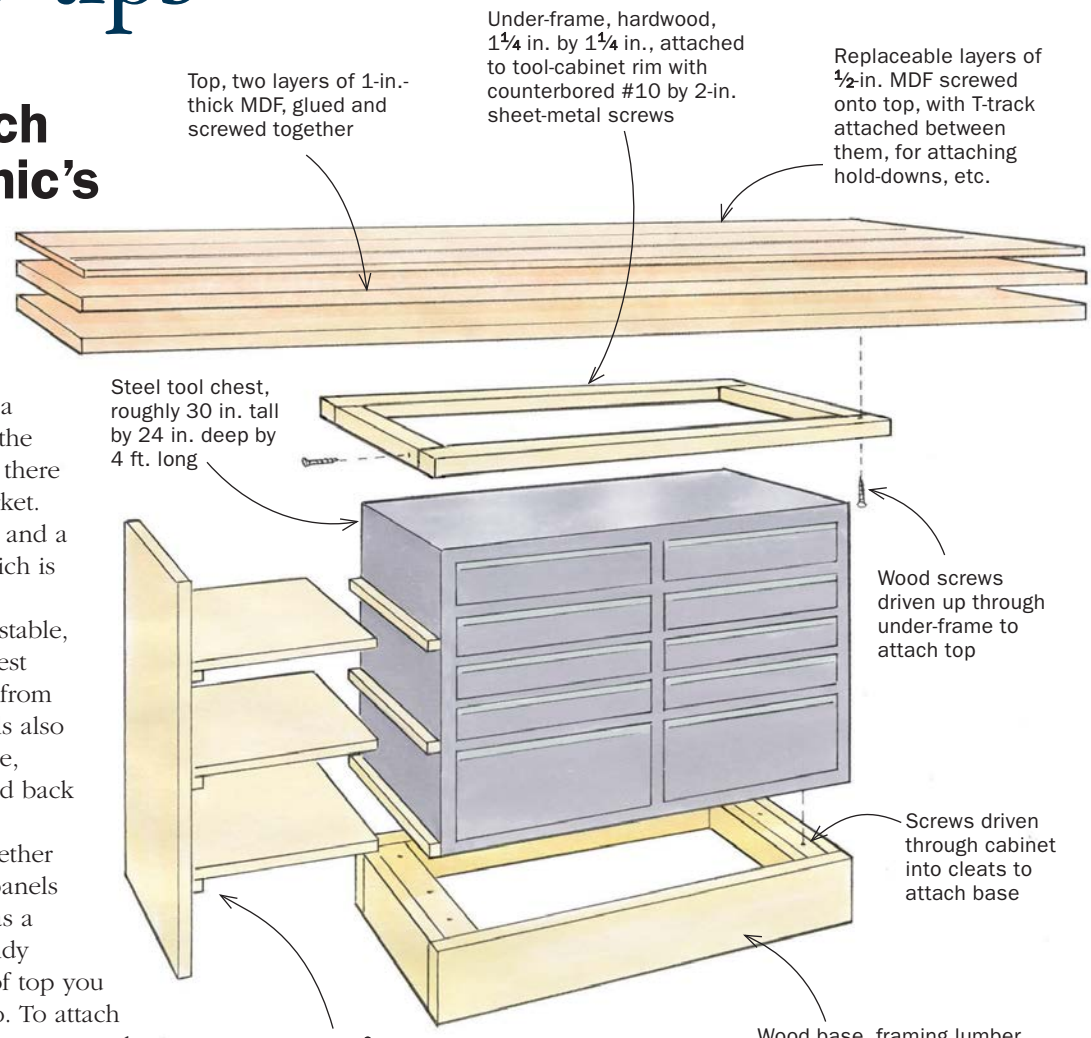
To make the workbench solid and stable, I removed the wheels on the tool chest and screwed on a wood base, made from framing lumber. Removing the wheels also let me add open shelving on one side, which is accessible from the front and back of the bench.

I made the benchtop by gluing together two sheets of 1-in.-thick MDF, with panels of ½-in. MDF screwed onto the top as a sacrificial top layer, separated by handy T-tracks. But you can add any type of top you like, and whatever vises you like also. To attach the top securely, I screwed a wood frame onto the outside edge of the tool cabinet, and then drove screws up through that.

Adjust the dimensions of the wood parts to suit your steel tool cabinet and your desired benchtop height. You can also paint the wood parts of the base to match the tool cabinet.

The finished workbench is solid, stable, and functional, with more than enough storage for hand tools, bench accessories, and more. It was very easy to make, and cost me $750 total, including the steel cabinet, vises, and wood parts.

—THOM LIPICZKY, West Stockbridge, Mass.



Best Tip

Thom Lipiczky started woodworking in the 1970s, making dulcimers and guitars. After a first career teaching music at a small college, he started a general contracting business doing mostly additions and remodels, which often included his own custom-made built-ins and furniture. Recently retired, he continues to build woodworking projects, some for fun and some for hire. Check out BuildwithThom.com for more.

A Reward for the Best Tip

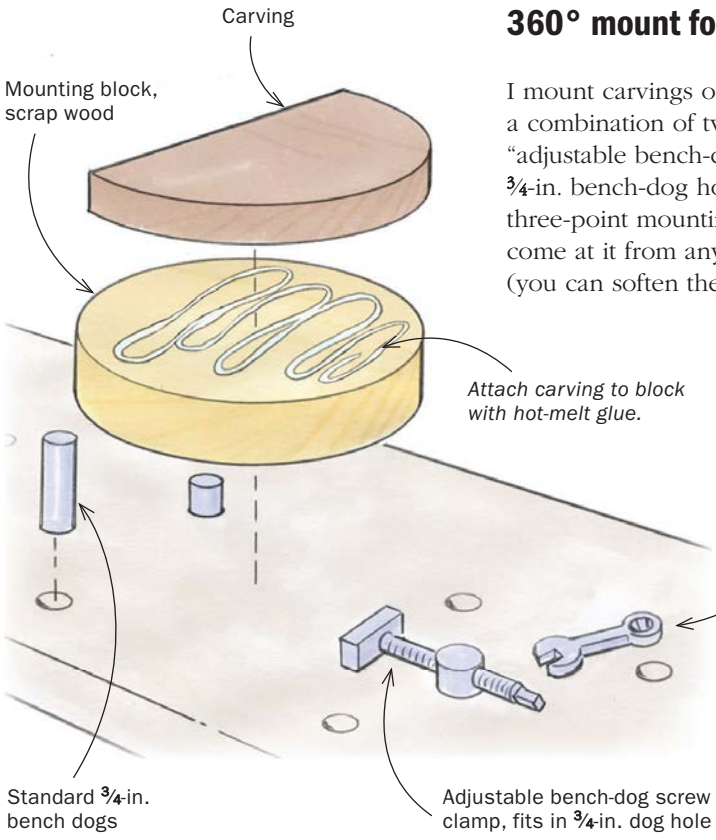
Send your original tips to fwtips@taunton.com. We pay $100 for a published tip with illustration; $50 for one without. The prize for this issue's best tip was a Lie-Nielsen No. 60½ Rabbet Block Plane.

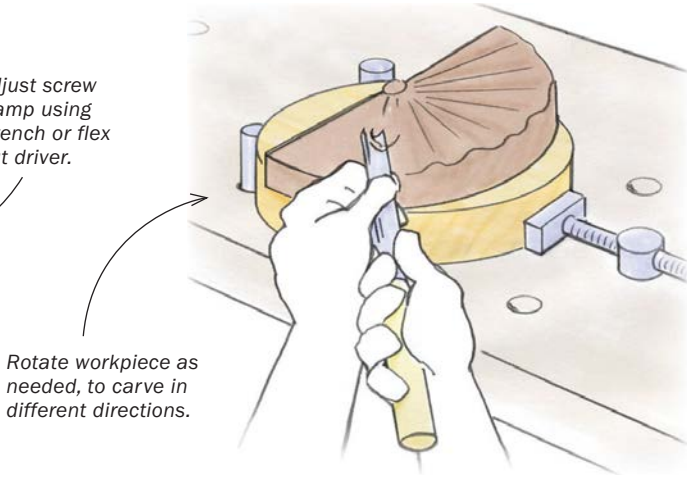
Drawings: Dan Thornton

360° mount for carvings

I mount carvings on a round block, using hot glue. The block is then held with a combination of two normal bench dogs and an inexpensive device called an "adjustable bench-dog screw clamp" (under $14 on Amazon), which fits into another ¾-in. bench-dog hole, and adjusts rapidly with a wrench or a flex nut driver. This three-point mounting system lets me rotate the carving quickly and easily so I can come at it from any direction. And the hot-melt glue makes it easy to pry off afterward (you can soften the glue with denatured alcohol if needed).

—VINCE FYIE, Port Sanilac, Mich.

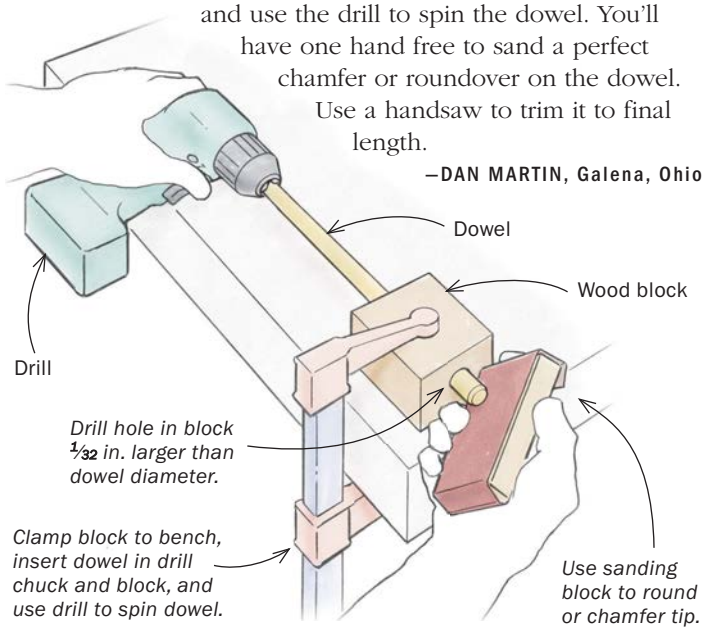




Easy way to chamfer or round a pin

If you need to make an even roundover or chamfer on a round pin or dowel, see if it's small enough to chuck in your handheld drill. If so, drill a hole in a wood block, 1/32 in. larger than the dowel, clamp the block to the bench, and use the drill to spin the dowel. You'll have one hand free to sand a perfect chamfer or roundover on the dowel. Use a handsaw to trim it to final length.

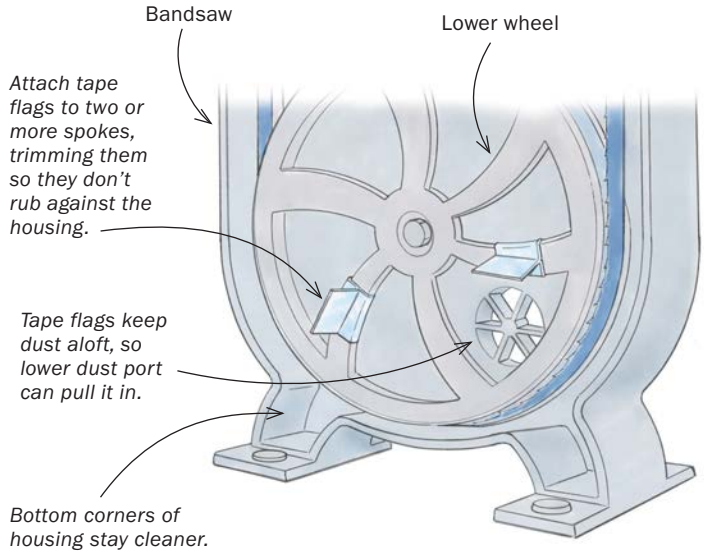
—DAN MARTIN, Galena, Ohio



Tape flags improve dust collection on bandsaw

To help keep dust airborne in the lower housing of my bandsaw, I added tape flags to two of the spokes on the lower wheel. This allows a lot more of the dust to be pulled into the dust port, instead of collecting in the lower corners of the housing.

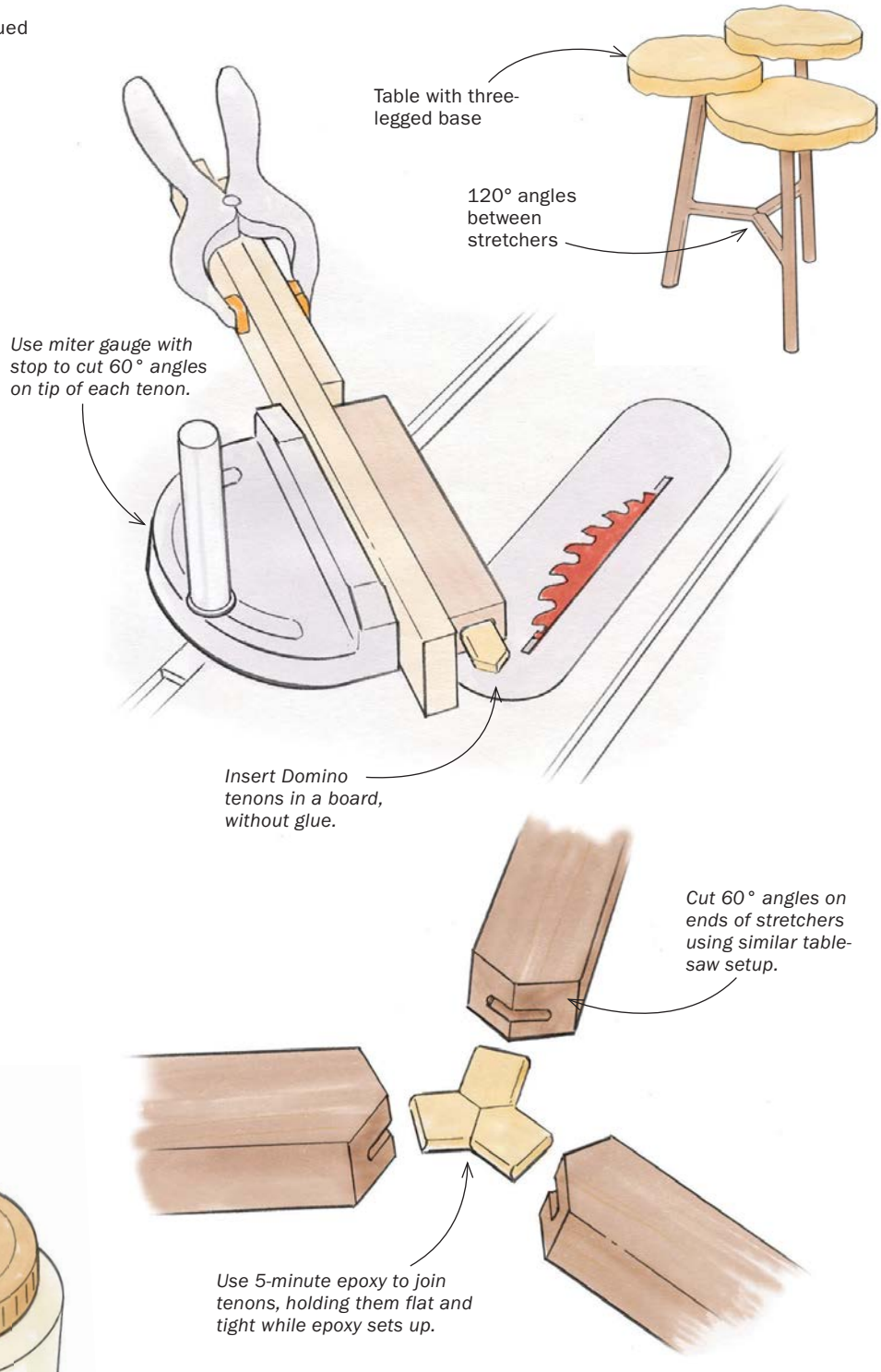
—MICHAEL NOLL, Bloomington, Ind.

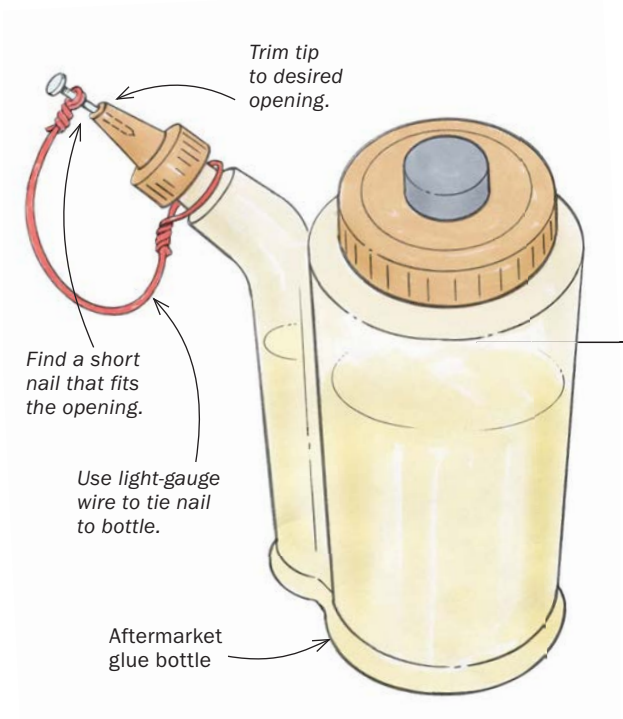


Three-way joint with the Domino

I figured out a way to use my Festool Domino joiner to make a clean, strong connection between the three stretchers on this table. This three-way joint should be helpful for all sorts of tripod bases. I started by sticking each Domino tenon into a mortised piece, without glue, and used the table saw's miter gauge as shown to center 60° angles on each one. Then I used 5-minute epoxy to glue the tips of the three Domino tenons together, holding them tight and flat by hand as the epoxy stiffened up, with clear tape underneath to protect the bench and resist the epoxy. Give the epoxy a full day to cure, and you'll have a strong, three-way connector. Next, I cut Domino slots in the ends of the stretchers, and then cut 60° angles on the ends of the stretchers using the same setup I used for the Domino tenons. The stretchers on this table are rounded; I did most of that after cutting and fitting the joints but before final assembly. The glue-up was a little tricky, but the tenons kept the stretchers in place so a band clamp could pull the legs and stretchers together, with the help of angled cauls clamped to the legs.

—PHIL GRUPPUSO, Seekonk, Mass.





Simple stopper for glue bottle

I use a nail to keep my glue bottle tip open and ready for use, with no need to clean off dried glue. After trimming the tip of my bottle to the opening I like, I find a nail that fits it, and then tether it to the bottle with electrical wire, so the nail won't go missing.

—ROB RINGER, Penn Yan, N.Y.

Woodpeckers Ultra-Shear router bits
Woodpeck.com
Prices vary by bit

BITS AND BLADES

Woodpeckers debuts impressive line of router bits

WOODPECKERS IS NOW PRODUCING high-performance router bits at its Ohio manufacturing facility, and selling them factory-direct, which lets them edge out similar top-tier bits on price. I tried a wide range of these new "Ultra-Shear" bits, and each one cut very cleanly, with the shear-cutting action keeping tearout to an absolute minimum.

I started with the spiral upcut bits, made from solid carbide, a type I rely on for a host of tasks such as template routing and cutting dadoes, mortises, and tenons. In all of these situations, the Woodpecker bits worked equally as well as my previous favorites.

Woodpeckers also makes compression-style bits, which twist downward against a top edge and upward at the bottom, to reduce chipping on both. As promised, these did a great job routing plywood with no fuzzing or tearout on the top or bottom surfaces.

I also tried ½-in. and ¼-in. flush-cutting bits with compression-cut spirals and bearings on top and bottom. Both cut flawlessly.

There are also a number of Woodpeckers bits made with carbide inserts, set at an angle for similar shear-cutting action. I got great cut quality from the rabbeting bit, and its large diameter gave it a very secure and smooth feel when cutting. Last but not least, I had my shop neighbor test out the new slab-flattening bit on his CNC, and it produced a very smooth surface, with minimal evidence of overlapping passes.

—Jeff Miller is a furniture maker and teacher in Chicago, and a frequent contributor.

Clean cuts on tricky woods. *A solid-carbide compression bit, with upper flutes facing downward and lower ones upward, left just the slightest amount of fuzz on the edge of Baltic-birch plywood, which is very prone to chipping.*

Top-notch rabbeting bit. *Some of the Ultra-Shear bits have carbide inserts, which cut very cleanly as well. The Ultra-Shear rabbeting bit has a wider range of bearings than most of its competitors.*

Photos: Asa Christiana (top); Jeff Miller (bottom 2)

Make your own ramps. *The system requires shopmade ramps, which hold your chisels at specific angles. Gochnour formed his main bevels using a 25° ramp and a 220-grit disk (left). Then he used a 30° ramp and a 1000-grit disk (right) to add a small micro-bevel. The whole process was quick.*

Stropping is also fast. *This happens atop one of the acrylic disks, using a leather disk that is charged with the provided buffing compound.*

SHARPENING

Low-cost system keeps chisels razor-sharp

Taytools Drill Press Sharpening System, V2
Taytools.com
$50 (for model with 6-in. disks)

Simple kit. *The system includes two arbors that go in your drill-press chuck and hold two acrylic disks, which accept a variety of self-adhesive sanding disks, as well as a leather stropping disk with buffing compound. The float glass piece also accepts sandpaper, for working on the backs of blades.*

AT THE HEART OF TAYLOR TOOLWORKS'S simple new sharpening system are two thick acrylic disks that mount in your drill press and accept a variety of sanding disks, along with a leather stropping disk. The kit also includes a length of thick, flat float glass, which accepts the same self-adhesive disks—or any other sandpaper—for flattening the backs of blades.

The user has to build one or two simple ramps (instructions are included) that sit on the drill-press table and guide the blades into the disks at specific angles. These are easy to build, however, and once you have them built, the Taytools system will sharpen and hone every chisel in your shop quicker than any other method I've used.

To get the most from the system, I deviated a little from the instructions. They recommend using a 220-grit disk and a 25° ramp to form a clean bevel on a chisel or plane blade, before stropping the blade by hand on the spinning leather disk to form a polished micro-bevel at the tip. That approach required me to press down hard on the leather to remove the sanding scratches, which rounded the tip and left it less sharp than I would like.

So I started again with a freshly sanded 220-grit, 25° bevel, and made a second ramp, at 30°, for quickly forming a micro-bevel at the tip, using a 1000-grit disk (procured elsewhere). This small, finely ground bevel was then much faster and easier to polish on the stropping disk, without the need to press down so hard. I also adhered 1000-grit sandpaper to the float glass, and used that to remove the sharpening burr on the back of the edge before stropping the bevel.

Even though you'll need to build a couple of simple ramps, and supplement the sandpaper that comes with the kit, it's a remarkable value and requires no special skills for success.

It's important to note that spinning disks cut faster toward their perimeter, which can leave an edge slightly angled. The instructions explain how to counteract this effect by shimming one side of the sharpening ramp to tilt it slightly. The effect is more problematic on wider plane blades, where squareness is even more important, which is why I recommend this system for chisels only.

—Chris Gochnour is a contributing editor.

Photos: Rose Serago (top 3); Asa Christiana (all others)

HAND TOOLS

Handmade floats for wooden planes and more

FLOATS ARE USED TO ADJUST the blade opening when making a wood plane, but they also work great for fine-tuning joinery. They can be sharpened with a file, and are made so adjacent surfaces don't get touched. Think of truing a tenon cheek without the risk of touching the shoulder. Or removing a whisker of material from a dovetail. You can do these things with other hand tools, but I often find that I can be more judicious with a float.

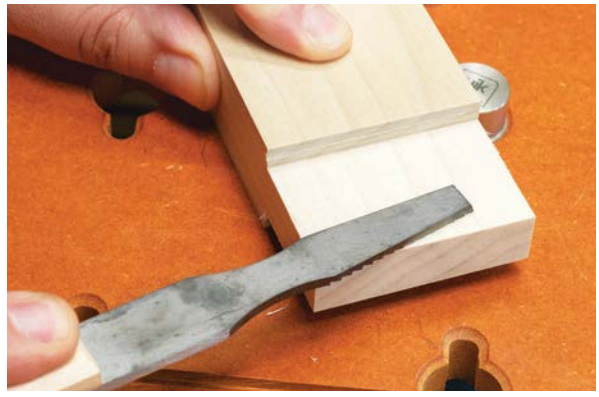
The floats I've used before, mass-produced in Japan, never worked as well as I thought they should. But these hand-crafted models from Red Rose remove the perfect amount of material: not so much that you go past your layout lines, and not so little that the task becomes arduous. Amazingly, they cost just about the same as the mass-produced models.

They come in push and pull formats. Push floats allow a more aggressive cut, pull floats a more delicate touch. I can see the value of both for different situations and also to ensure that you are working with the grain.

The ends of the handles can be uncomfortable, but that's easily solved with a bit of filing.

—Vic Tesolin is a frequent contributor.

Red Rose floats
RedRoseProductions.com
$78 to $84



Great for joinery too. *The small cheek floats are excellent for adjusting the fit of dovetails and tenons, taking off a whisker of material without affecting nearby surfaces.*

ACCESSORIES

Roller guides improve results on a variety of machines

I HAVE A NUMBER OF COMMERCIAL and shopmade featherboards, which I use on my table saw, bandsaw, and router table. The new Compass Roller Guides work better than any featherboard I own.

What makes them special is how easy they are to adjust and use. After you touch the rollers to the side of your workpiece and lock them, a precise dial sets the pressure. Each roller is spring-loaded, so even if you don't align them perfectly, both press on the work. The urethane rollers move in just one direction, allowing the workpiece to move forward but not backward (or upward) making cuts accurate and preventing kickback.

The Compass mates with the miter slot on any machine table, as long as the slot is T-shaped. I tried the RG-1 model, which has one layer of rollers; but the RG-2 adds a second pair on top of the other, doubling the height for just $20 more. They aren't cheap, but these roller guides are a joy to use on a range of machines.

—Asa Christiana is FWW*'s editor-at-large.*

Compass Universal Roller Guides
HarveyWoodworking.com
$280 for RG-1 model (shown)

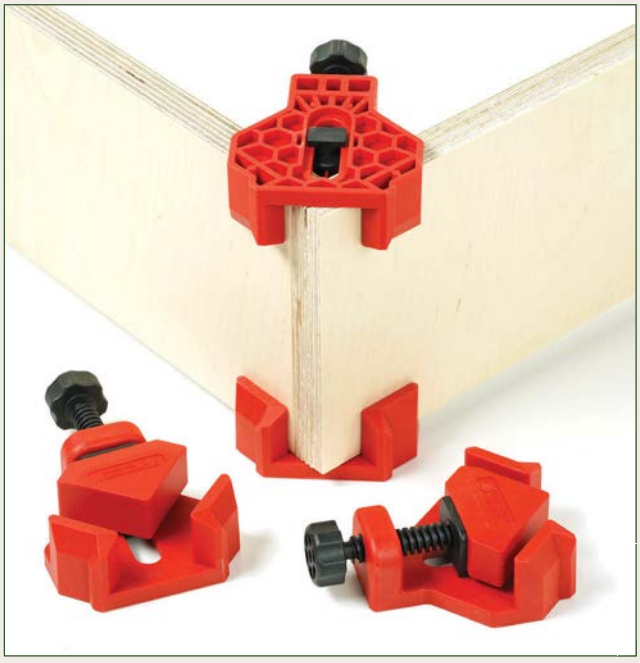
Photos: Vic Tesolin (top); Asa Christiana (bottom)

■ NEW TO MARKET

Three good values to look out for

Wall-mounted dust collector is a bargain

If you keep hose runs relatively short, a compact, wall-mounted dust collector like this can serve as the sole collector in a small shop, without occupying precious floor space. They also work great as an addition to a larger collector, letting you avoid running hoses across the shop floor. This 1-hp unit from Powertec is similar in size, filtration, and features to the wall-mounted collectors I reviewed favorably in *FWW* #286. At just $260, it beats them all on price. Go to PowertecProducts.com for info.

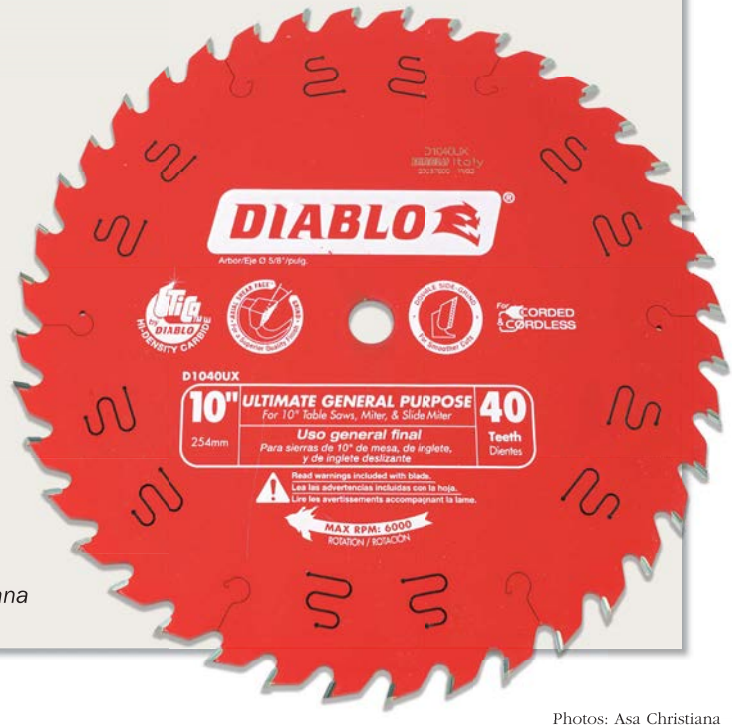


Corner clamps come in handy

At just $28 for an eight-piece set, these corner clamps from Viking Mountain Tool Works do a great job holding cabinet and box parts in position while you screw or otherwise join them together. They adjust easily and hold firmly, leaving room for screw access as well as bar clamps for glued joints. Go to VMTW.com for more info.

Inexpensive sawblade is surprisingly good

I own a couple of thick, high-end table-saw blades, which deliver clean cuts in the toughest materials. But not every woodworker has a powerful cabinet saw like I do, nor the budget for blades priced well above $100 each. Enter Freud's new Wood Demon Ultimate General Purpose Saw Blade (item no. D1040UX). At just $50, this 10-in. by 40-tooth combination blade delivered surprisingly clean cuts in my tests. Its super-thin kerf is especially suited to saws with less horsepower, allowing them to handle thicker hardwoods. Go to DiabloTools.com. *—Asa Christiana*



Photos: Asa Christiana

The business of curvature

BY DAVID HAIG

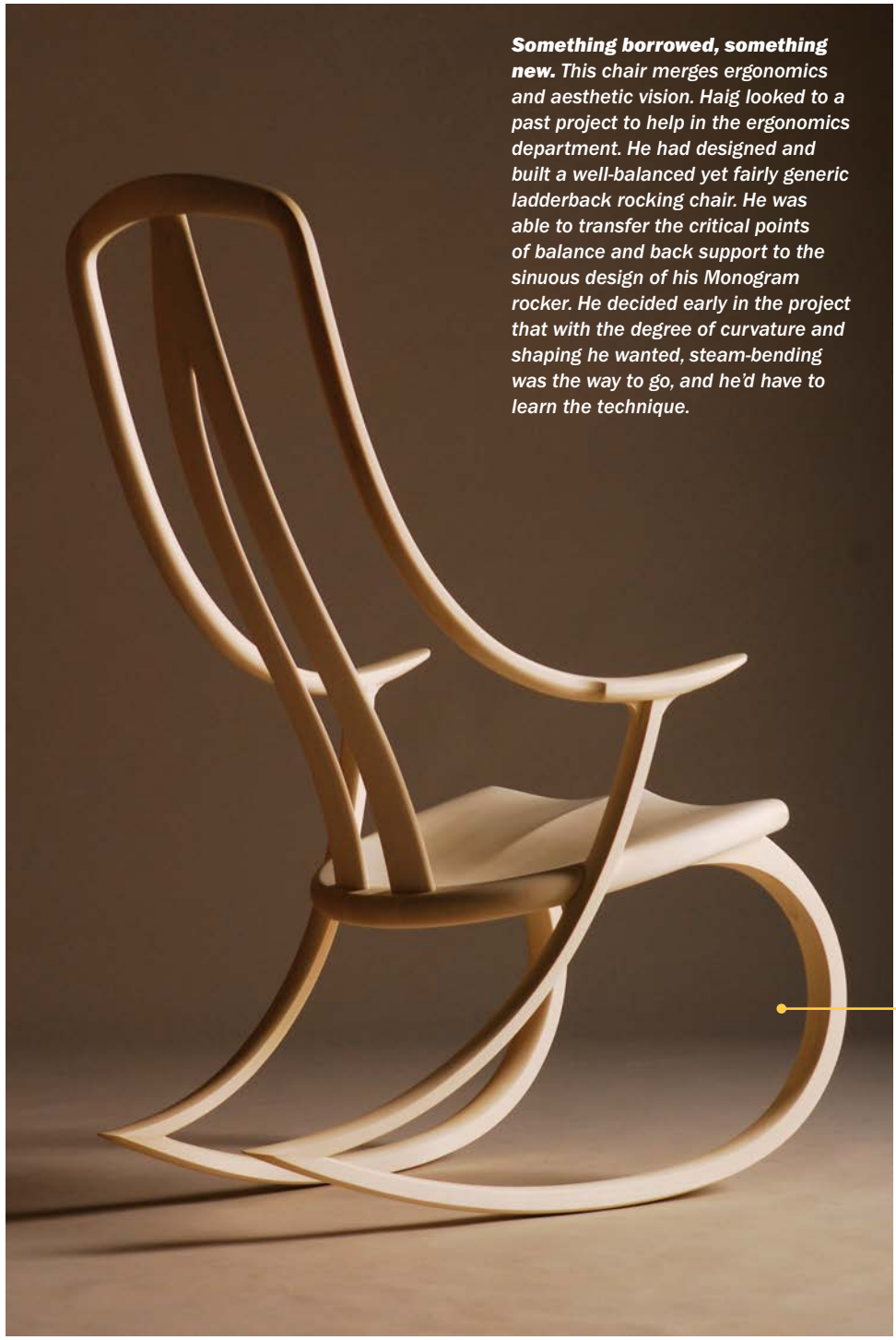
Designing anything new is a strange process because the origin of ideas is so fundamentally mysterious. But there are well-worn pathways, and like many I usually start with a lot of sketching and slowly, from the jumble, something begins to crystallize.

Sometimes it's an image, sometimes just a line or a thought, but some quality suddenly resonates with the initial question or impulse. It can feel like a homecoming after a long absence, some warmth, almost familiarity as the door is approached. As a piece emerges in the mind with all its complexity and potential, questions and doubts often arise, too: Can I do this? Is my level of skill and understanding adequate? And, most crucially, is this idea worth the weeks of work, burning through expensive and sometimes rare materials, the costs on every level that committing to making something meaningful entails?

The design apart, when it comes to construction we woodworkers are on more solid ground. We can learn how to assess the suitability and refinement of the construction of any piece based on long traditions as well as contemporary understanding of wood and wood engineering. Whether a piece is built using a CNC or hand tools, if it's of wood, there are joinery and construction choices to be made—good, less good, and some outright bad.

There are always these powerful but somewhat contradictory forces involved in designing and making. But this friction may be what powers up the whole enterprise and makes it worthwhile.

David Haig is a furniture maker from Nelson, New Zealand.



Something borrowed, something new. *This chair merges ergonomics and aesthetic vision. Haig looked to a past project to help in the ergonomics department. He had designed and built a well-balanced yet fairly generic ladderback rocking chair. He was able to transfer the critical points of balance and back support to the sinuous design of his Monogram rocker. He decided early in the project that with the degree of curvature and shaping he wanted, steam-bending was the way to go, and he'd have to learn the technique.*

Photos, except where noted: Daniel Allen

STRATEGY FOR CURVED PANELS

A good idea sometimes fails for want of a suitable technique, which is why technical understanding is so valuable. A problem I worked on for some years was how I could make wide, tapered panels look as natural and unforced as possible. My Andromeda coffee table (left photo, below) was the first result of that exploration, and Sally's Hall Table (right photo) was the second. I ended up writing a full article on the technique, "Curved Panels for Furniture," *FWW* #231, where I explain how I make the kerfed, curved tapered panels and how to cover the edges that showed the kerfing cuts. With the edging my ability to steam-bend came into play: I cut edging strips from the same plank as the facing wood so the grain would match, and then steam-bent them to follow the curve. When done carefully, the effect was exactly as I wanted, and it was not easy to detect that the panels were other than all solid wood. I use solid wood whenever possible because you can shape it as you please, without the fear of exposing gluelines.

MONOGRAM ROCKER

My Monogram rocker involved an intense creative process. Designing it became an obsession with months of feverish sketching. One morning the missing line came into focus, and that strange sense of homecoming arrived.

I had the desire to build a rocker that was truly fluid but also crisp and minimal. It is certainly much easier to design within the bounds of some well recognized stylistic reference, for instance Mid-century Modern or Arts and Crafts. This gives plenty of hooks and pegs to hang your ideas from, and for other people to relate to.

I was lucky and sold the first rocker. Building the second was harder because I was not buoyed by the same degree of wonderment and surprise, and I had to rework the parts of the chair that were not good enough. Over the next 30 years, I've made close to 300, a number that even now seems inconceivable. With countless refinements along the way, the chair is now a much better resolved piece. But amazingly, the initial design in its essence remains unchanged.

Photo, top left: Jonathan Binzen

EVOLVING DESIGN

Stages of completion. *Concepts don't always arrive fully formed and will even sometimes arrive in discrete parts, separated by several years. Haig's Folium chair (above and bottom right) and his Orpheus bench (opposite page) are examples of inspiration in spurts.*

I've seen in many designs how the ideas expressed looked only partly complete, as if the designers had moved on to new ideas before they fully explored and resolved their earlier ones. It is to avoid this that good makers of music or art (or anything really) frequently work through themes or series, refining with each new iteration.

In the case of my Folium chair, I'd been attracted by the idea of a leaf shape for a backrest for many years and had at one point tried to integrate the idea into my rocker. It was difficult to attach the two halves of the leaf onto a re-curving central spine, but the comfort and strength seemed outstanding. I decided the leaf was wrong for my existing rocker, but the leaf idea remained.

I designed my first three-legged chair around 2000 and called it my V chair (top photo). I refined it over several more years and have made several sets of six or eight, even one of 12, and it's proved that three legs, if properly spaced and splayed, are just fine for stability, and lend a special poise and elegance. Then in 2014, in a simple flash of recognition, I saw that a three-legged chair was the perfect form for building a chair with a leaf-shaped back, as the stem could naturally form the single rear leg. The chair's front and seat were already well resolved in the V chair, so

Photos, top left and bottom: Digby Shaw

with a little tweaking, I could graft the leaf idea onto it. It was an exciting moment, and one where a simple sketch pretty much encapsulated the whole piece.

In another case of a design coming together over time, with my Orpheus bench (above), four years separated the seat from the back. I completed a tunnel-shaped bench during an artist residency at the Center for Furniture Craftsmanship in Maine in 2019. Four years later, when I got a second invitation to CFC, I completed the backrest. The tunnel shape was my initial goal, and once that was built, I left it in storage, but it did not feel completed. My task was clear: It needed a backrest, and the question was how to add this in an integrated, but bold and unfussy way. Drawing the sweeping curves running through the sides and up to support a backrest was another of those breakthrough moments, and the shape and form of the backrest followed without too much struggle.

Photo: Clare Haig

LOCKDOWN CABINETS

These paired Lockdown cabinets were my commissioned project during our Covid lockdown and were one of the reasons my memories of that time are such happy ones, as grossly unfair as that sounds. They were a sort of take on Arts and Crafts, perhaps Charles Rennie Mackintosh, riffing on the interaction of curves with squares and rectangles, except these curves were parabolic not radial. Very satisfying pieces and one of the few times I've successfully used the timber provided by a client—in this case wild English cherry, garden grown.

BLANKET CHEST

This blanket chest in Pennsylvania black cherry was a wedding gift for my middle son and his wife, and like the writing desk, it has curves that were subtle enough to require almost no steam-bending. The front and back panels were shopsawn veneers applied to thin flexible panels, but the top and sides were solid cherry. The top was curved to form a seat shape, comfortable for putting on socks and shoes at the foot of a bed. The difficult part was fairing in the top of the solid panels to the curves of the mortise-and-tenoned frame where side grain abutted end grain.

Form-Fitting Outdoor Chair

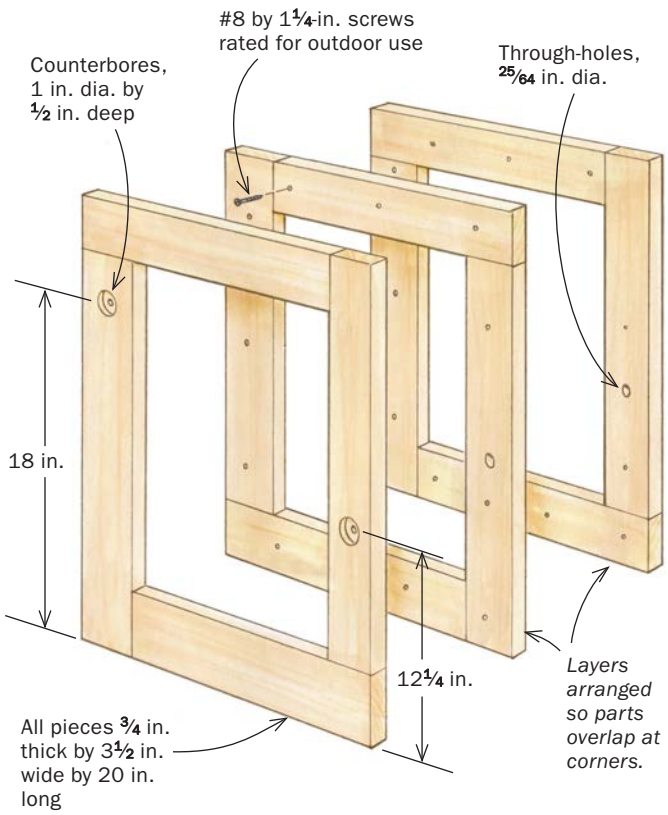
Slat construction makes assembly easy

BY ASA CHRISTIANA

Photos: Asa Christiana; drawings: Dan Thornton

Start with the side frames

These are built with three overlapping layers, the first two held together with glue and screws, and the last one attached with glue only. This approach lets you move through most of the assembly without waiting for glue to dry, and hides the screws inside the layers.



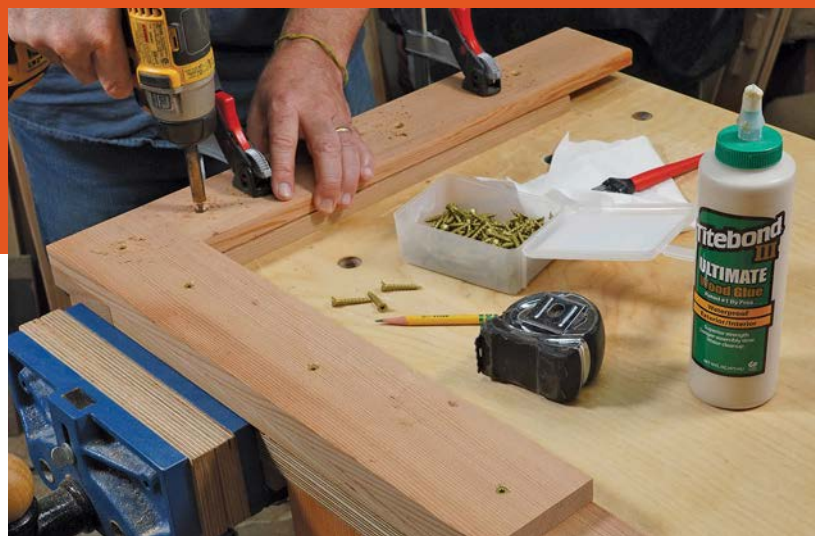
This chair is held together with long threaded rods (plus nuts and washers), which not only make assembly easy but also make the chair indestructible. It's a great example of how sturdy, stylish pieces don't have to take weeks or months to build.

Because the bolts and nuts can be tightened at any time, they guarantee that the chair will stay as solid as the day you built it, no matter how much the wood shrinks and expands outdoors.

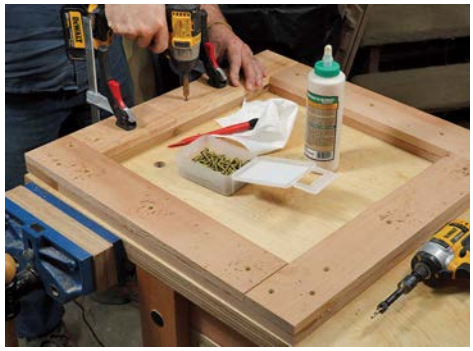
The bolts are also key to the chair's comfort, passing through the two side frames to align a series of template-routed slats that hug the sitter's butt and back. Those frames are easy to build, by gluing and screwing together overlapping layers of the same ¾-in.-thick cedar the slats are made of.

I like the way the rows of thin, curved slats catch the eye. While the chair is very comfy as is, if you plan to spend hours hanging out or reading in yours, as I sometimes do, try adding flat, firm cushions to the seat and back. The cushions can always come indoors when it rains.

I also designed a simple side table to accompany the chair, assembled in much the same way. The plan for that table is an online extra, available at FineWoodworking.com/309.



Build in layers. *Use Titebond III, which is rated for outdoor exposure. Clamp the boards in position, drill and countersink clearance holes for the 1¼-in.-long screws, and drive them slightly below the surface of the wood.*



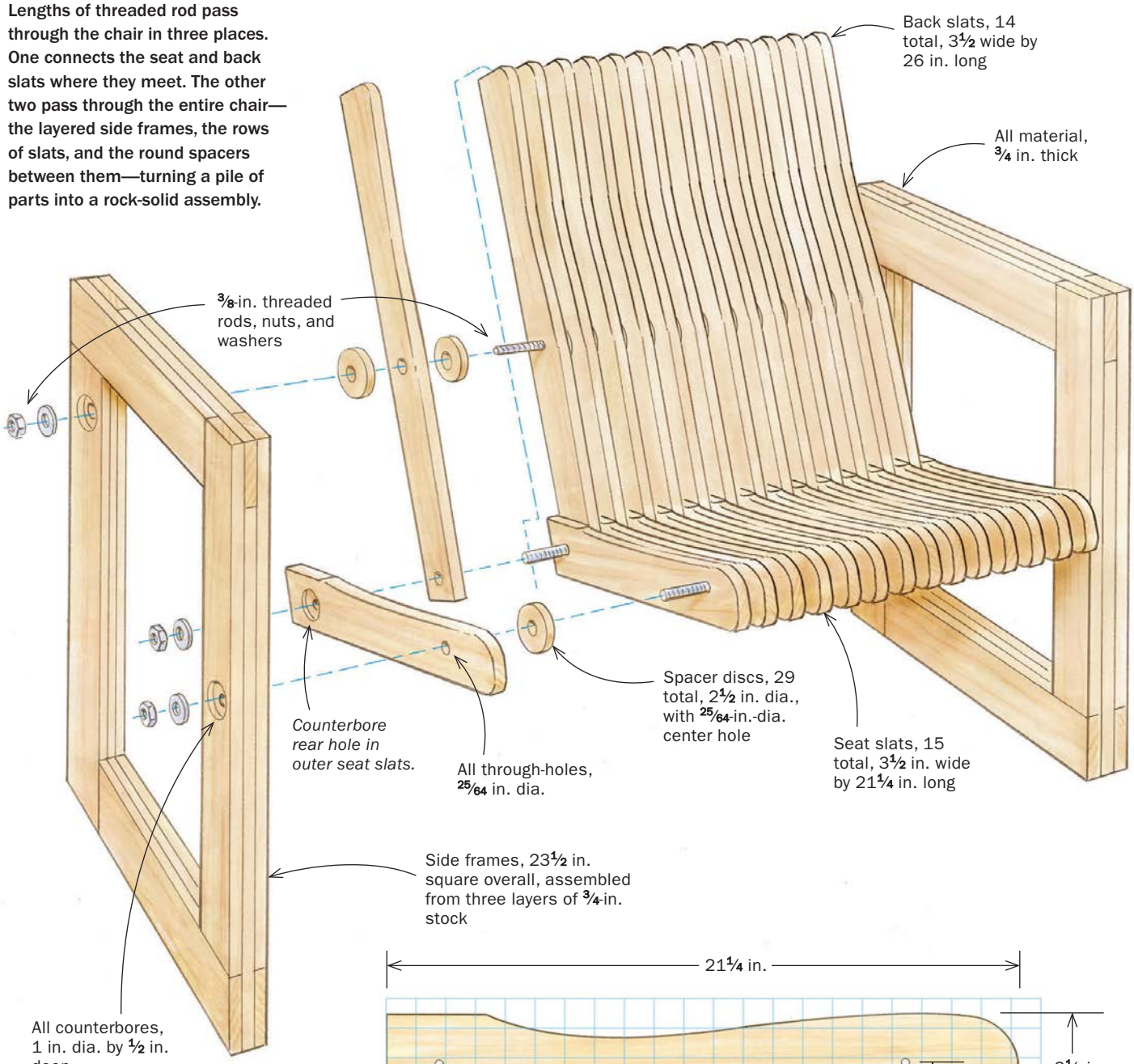
Complete the square. *Keep working your way around the first two layers, using glue and screws to attach the overlapping boards. The glue will tend to make the top board slide around, so clamp it in position before drilling and driving.*

Last layer. *You're relying on glue alone to hold this third layer in place. Wait a couple of hours for the first two pieces to firm up before adding the next two. Wipe away squeeze-out as it happens.*

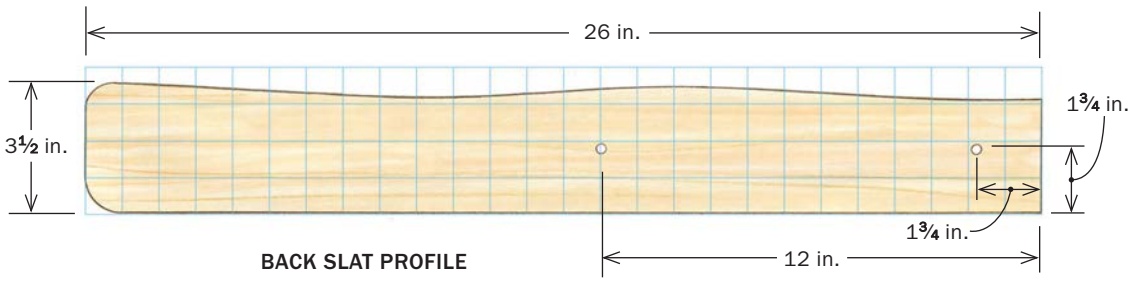
Trim and drill. *Clean up the outer edges at the table saw and soften the corners with a 3/16-in. roundover bit. Finally, clamp the frame in place and drill each counterbore and through-hole before moving to the next hole location.*

OUTDOOR CHAIR

Lengths of threaded rod pass through the chair in three places. One connects the seat and back slats where they meet. The other two pass through the entire chair—the layered side frames, the rows of slats, and the round spacers between them—turning a pile of parts into a rock-solid assembly.



SEAT SLAT PROFILE



BACK SLAT PROFILE

Material matters

I love eastern and western red cedar for outdoor projects. It's light, strong, good looking, and very resistant to decay. Just be sure to avoid the creamy sapwood, which does not have the same rot-resistance as the darker heartwood. Do that and you can skip the finish, letting the wood weather to a nice silvery gray.

I used ¾-in.-thick cedar throughout, but 1-in.-thick material would also work well. Whichever you choose, note that the frames must be made from material of consistent thickness, as must the slats and the circular spacers that divide them. Also, the goal is to have the seat end up around 19 in. to 21 in. wide, so if you use material thicker than ¾ in., you will need fewer slats than the number shown in the drawing.

By the way, since all of the parts are relatively short, I saved a lot of cash by buying cedar cutoffs from a local wood reseller.

Template-routing delivers matching slats

The most time-consuming part of this project is bandsawing and template-routing the big pile of seat and back slats. But this goes pretty quickly once you make a ¼-in. MDF or plywood template for each.

The templates are screwed directly onto each slat for routing, and the screws are placed right where the threaded rods will pass through, leaving perfect starter holes for a larger drill bit later. This ensures that the slats will line up perfectly in the chair.

The template pieces and slat stock start at the same overall length and width, so one will be easy to align on the other. Use the ¼-in. to 1-in.-scale grids on the opposite page to lay out the templates, and try to keep the curves as smooth as possible. I used a compass, a French curve, and a long, bendy stick to draw mine, and smoothed them on my benchtop sander. Don't forget to mark and drill small holes for the attachment screws.

After template-routing all of the slats, use a 3/32-in. roundover bit to ease all of the edges. Last, drill and counterbore the slats for the long threaded rods. I started with a ⅜-in. twist drill on the drill press, which follows the little screw holes left behind in each slat. Then I opened up these holes a little with a 25/64-in. bit. Note

Template-rout the slats

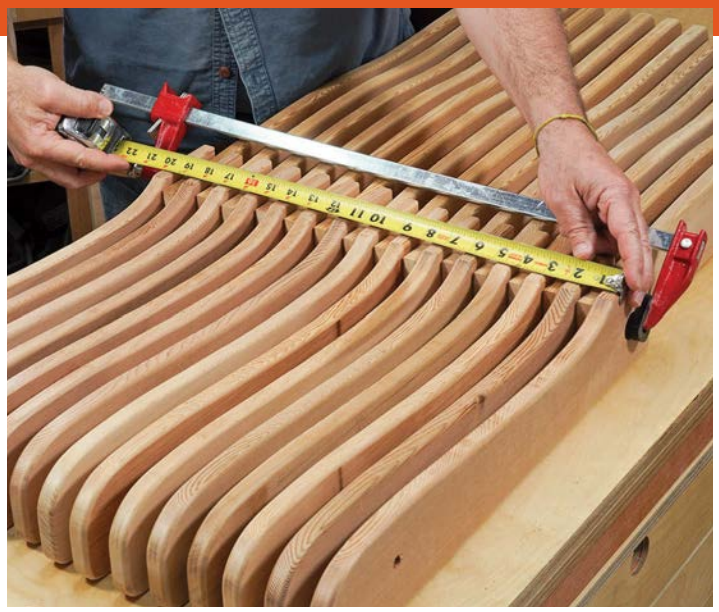
Start by cutting the template pieces and slat stock to the same overall size. Then transfer the slat profiles to the template pieces, and cut and sand those to size.

Trace and remove waste. *Start by tracing the template outlines onto the slat stock, and then remove most of the waste from the slats, by bandsawing roughly ⅛ in. outside the lines.*

Flush-trim and round the edges. *Use ¾-in.-long screws to attach the seat and back templates to their respective workpieces, and pattern-rout the profiles. Last, remove the template and use a 3/32-in. (or ⅛-in.) roundover bit to soften the edges.*

Assemble the chair

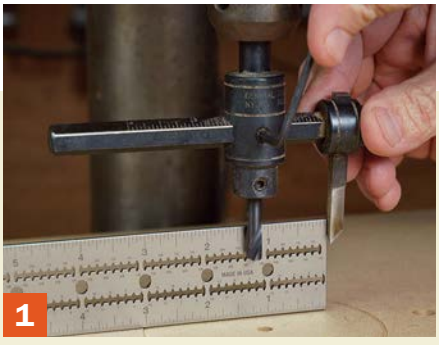
One of the threaded rods creates a hinge of sorts between the upper and lower slats. Then the two longer rods pass through the entire chair, side frames and slats included.



Bolt the slats. *Insert the threaded rod that joins the seat and back slats, clamp the slats together, and measure across them. Subtract ¼ in. from that dimension, and cut the threaded rod to length with a hacksaw. Chamfer the cut end with a mill file, slide the rod in place, and add a washer and nut on each end. Snug them up just loosely at this point.*

MAKE A PILE OF CIRCLES

A circle cutter works better than a hole-saw here. Mount the cutting bit facing inward and adjust its tip roughly ⅛ in. higher than the tip of the drill bit. Then adjust the arm to produce 2½-in.-dia. circles (1). Use the circle cutter in a drill press—never freehand—and set the machine at its slowest speed. Clamp the workpiece in place, and keep your hands clear as you work (2). Finally, enlarge the center hole using a 25/64-in. twist-drill bit (3).



that the holes at the back of the two outermost seat slats need counterbores as well, because their long bolts end right there with nuts and washers.

Fun with circles

There are spaces between the chair slats, so some sort of filler blocks were needed to keep the spacing even and the chair solid when the bolts were tightened. I thought about making those spacers square, but that would have required that each block be carefully aligned during assembly to create a cohesive look.

Then I remembered my favorite drill-press accessory, the General Tools No. 55 circle cutter. Unlike a hole saw, which is really a contractor's tool, designed to cut rough holes in framing lumber, the General No. 55 cuts very clean holes up to a whopping 7⅞ in. dia., and is infinitely adjustable in its range. Even cooler, when you reverse its cutting bit, the No. 55 will cut smooth circles just as well, which are perfect for this project.

There are some important safety rules, however. First, the circle cutter must be used in a drill press only—never in a handheld drill. Second, the workpiece must be clamped securely. Last, keep your hands well away from the whirling arm.

Online Extra

MATCHING TABLE PLANS

Build this small side table to accompany the chair. For more information, go to **FineWoodworking.com/309.**

Add the spacers. *Pass the other two full-length threaded rods through the slats, adding round spacers as you go. If the holes are misaligned slightly and the rod jams, you can open up holes as needed with a slightly larger drill bit, held in a cordless drill.*

By the way, the drill bit on the circle cutter makes a hole in the center of each circle. So all I had to do was widen those holes afterward with my 25/64-in. bit, and they were ready for the bolts to pass through.

Assembly is quick and easy

The threaded rods come in 3-ft. lengths at most home centers and hardware stores. You'll need three. When cutting the rod to length, note that they need to end up roughly ⅛ in. short at each end so they don't stick out of their counterbores. I covered the bolt holes with plastic caps (from Amazon), but feel free to omit the caps and embrace the look of exposed hardware. □

Asa Christiana is FWW's *editor-at-large, and the author of a number of books for new and intermediate woodworkers.*

Attach the sides. *Slide the side frames onto the threaded rod, and clamp them against the slat assembly. Thread a nut (with its washer) just barely onto one end of the rod, then tighten the opposite nut, and cut off the excess part of the bolt. Last, re-position the nuts to even them out on the rod. Cap the holes if desired.*

Understanding Grain

Revelation in a chair. *After decades of splitting out green logs to make parts for chairs, Peter Galbert wondered if he could split kiln-dried planks and create parts with similar attributes. He discovered that he could, and along the way he gained a far deeper understanding of how fibers travel in a mill-sawn board, and what the face grain reveals—and conceals—about those fibers. In this Windsor, based on a design by Curtis Buchanan, the turned maple legs, shaved ash spindles, and steam-bent oak continuous arm were all made from kiln-dried stock.*

A chairmaker's secrets revealed

BY PETER GALBERT

When I began working with wood split from logs it was a revelation. Not only for the reasons I first expected—I knew I would enjoy working the soft green wood, but I didn't appreciate what changes would arise as a result of splitting the wood. Riven parts are a different animal altogether than sawn parts and can be worked very differently. In recent years, I've used techniques that allow me to make riven parts from sawn and dried planks while enjoying most of the same benefits of parts split from green logs. It has changed the way that I look at boards and empowered me with a deeper understanding of how to work with wood regardless of how it came into my shop. I'm continually finding new benefits from this, regardless of what I am building.

When you split a log, the cleavage follows the growth of the tree and ensures that the long fibers stay intact. This harnesses the tree's strength, making slim parts stronger and more flexible. Freshly cut wood is also soft, which is an obvious benefit to hand-tool use, but another major advantage of riving, one I didn't anticipate, is how it makes parts identical in grain pattern, each having long fibers running the entire length. Clean cuts are always to be found cutting from thick to thin. No more trying to find the "safe" direction to cut without tearing out. This adds substantial speed to the use of hand tools and is especially beneficial when turning parts. Orienting turnings so that the fibers follow the axis of the turning prevents tearout. Another advantage of not having grain runout is that joints can be made stronger and more easily, plus parts can be bent with a higher rate of success and to tighter radii. Finally, riving creates predictable surface patterns that can be used to harmonize the grain pattern with the shaping and design.

In recent years, I've often had trouble sourcing good green wood; and many of my students come from regions where suitable logs are not readily available. This sent me down a rabbit hole exploring air-dried and kiln-dried boards to see if I could split them and get the same benefits I get with wood riven from green logs. The good news from the rabbit hole was that it was not just possible to split dried wood along the fibers, but convenient and sometimes preferable to starting from a log. Most of my work in this has been

Benefits of parts that follow the fibers

Hand-shaping

Hand-shaping is simplified. *When there is no grain runout in a part, shaping it—whether with a drawknife, spokeshave, hand plane, or chisel—is far easier and more predictable.*

Turning

Turning is truer. *With fibers following the length of a turning blank, there is minimal tearout and the resulting part has maximal strength.*

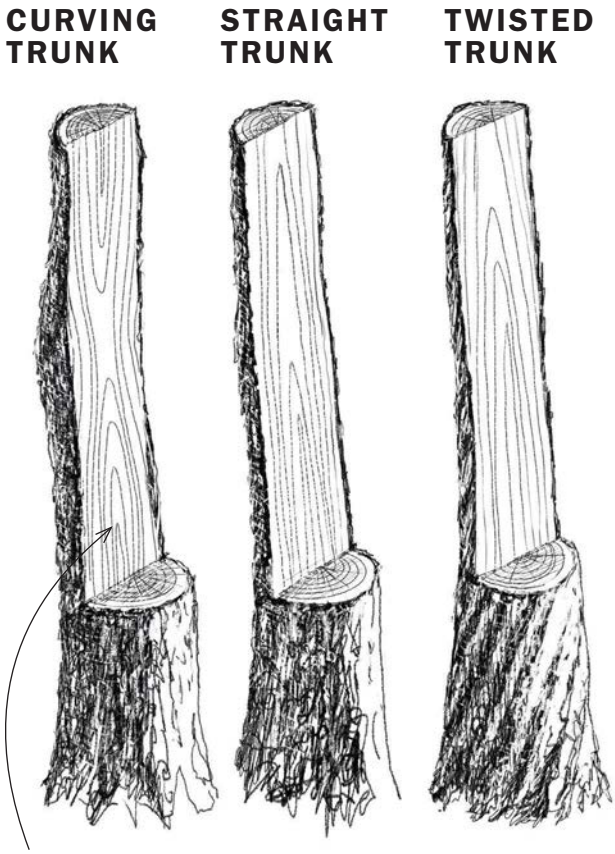
Bending

Clean bending. *When you make a part whose fibers run its full length, you get the best possible bending stock, best for bent lamination but also best for steam-bending.*

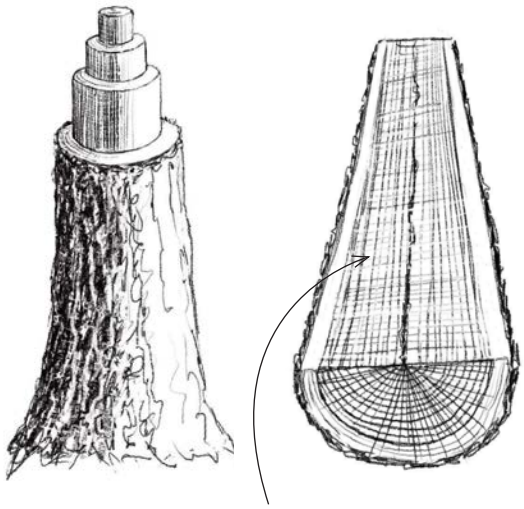
Photos: Jonathan Binzen; drawings: Peter Galbert

Twist is a hidden culprit

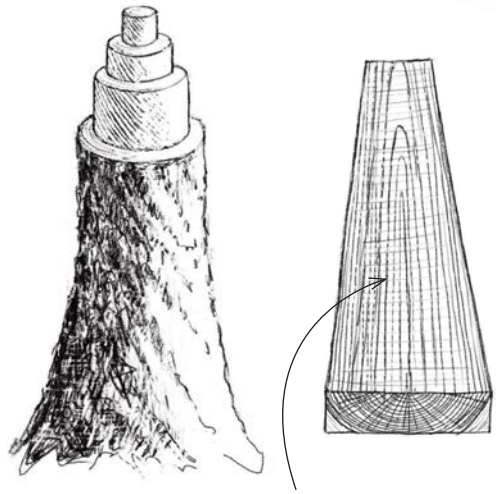
When reading the grain in boards sawn from trees, it is easy to misunderstand the evidence. Years of splitting out green logs—where the split unerringly follows the fibers—taught Galbert that nearly all trees twist as they grow. Yet the grain pattern on the sawn surface of a plank won't reveal that.



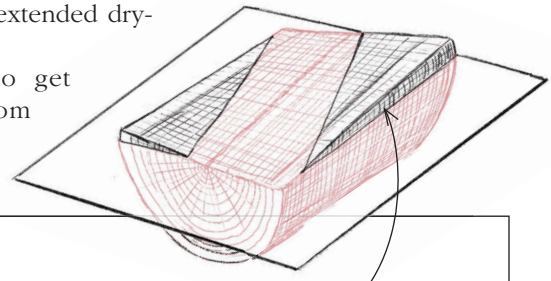
Face grain can reveal the shape of the tree, as here with the bulls-eye grain on the trunk on the left. But it won't reveal twist.



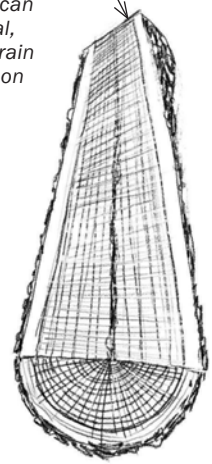
Growth rings, which are added in annual sleeves, nest in layers, as can be seen on the surface of a flatsawn board.



A flatsawn plank cut from a twisted tree will have a similar grain pattern on its surface. The twist is only revealed when the wood is split—or the woodworker attempts to plane the surface!



When a tapered or twisted tree is flatsawn, the grain lines can look vertical, but short grain is exposed on its surface.



with white ash and red oak, hickory, walnut, and maple. I'll show how to get riven parts from boards, but first I want to highlight the differences between sawn and split parts.

Starting from the log

In a green log, because the lignin in the wood hasn't hardened through drying and the wood remains very flexible, the splitting action easily follows the path of the fibers regardless of how curved, twisted, or tapered the tree. Each part split out this way will have exposed end grain only on its actual ends. Because they have no grain runout, split parts can be worked cleanly in any direction, and bending and turning them results in stronger, more reliable parts.

When planks are sawn from a log, the saw ignores the path of the fibers, simply cutting straight through the log. The saw cuts across fibers, exposing end grain all over the board; this is why, when you joint, plane, turn, or shape wood from a plank, your direction of cut needs to be determined and often changed depending on the side being cut.

Bridging the gap between logs and boards

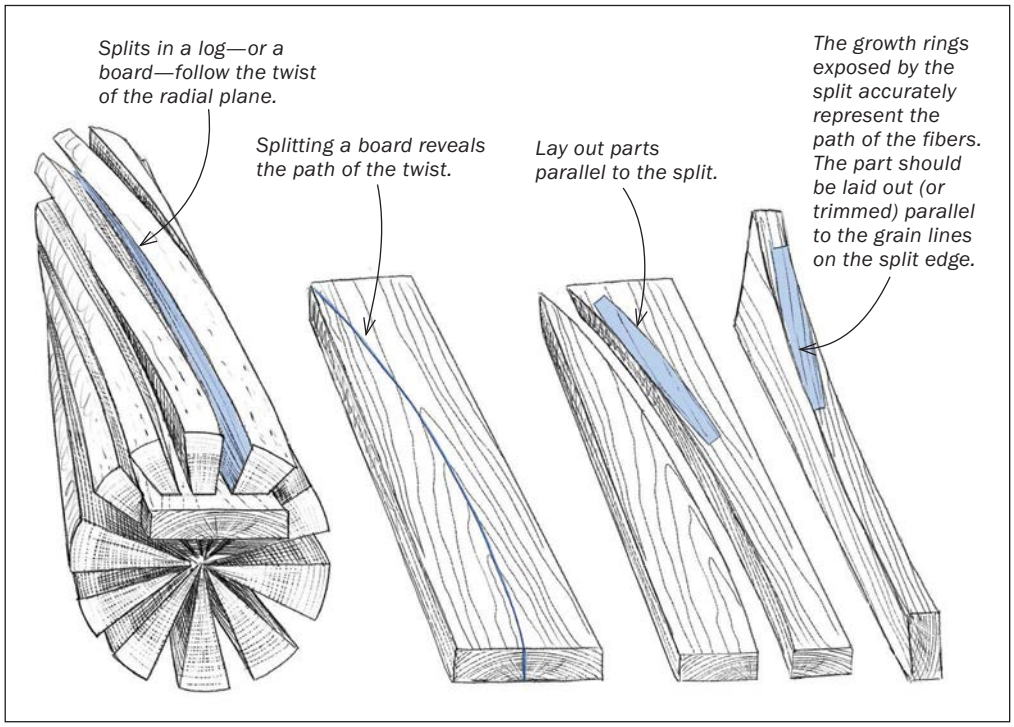
Parts riven from green logs clearly have advantages, but suitable green logs can be tough to find, move and store, and then there's the physicality of splitting them. Other drawbacks can be the shrinking during drying and the long time needed to dry green parts.

I began to think that using dried planks as my source material could ease or eradicate some of these issues. They're easy to source or import, store indefinitely, retain their shape after bending, and can be used after steam bending without extended drying times.

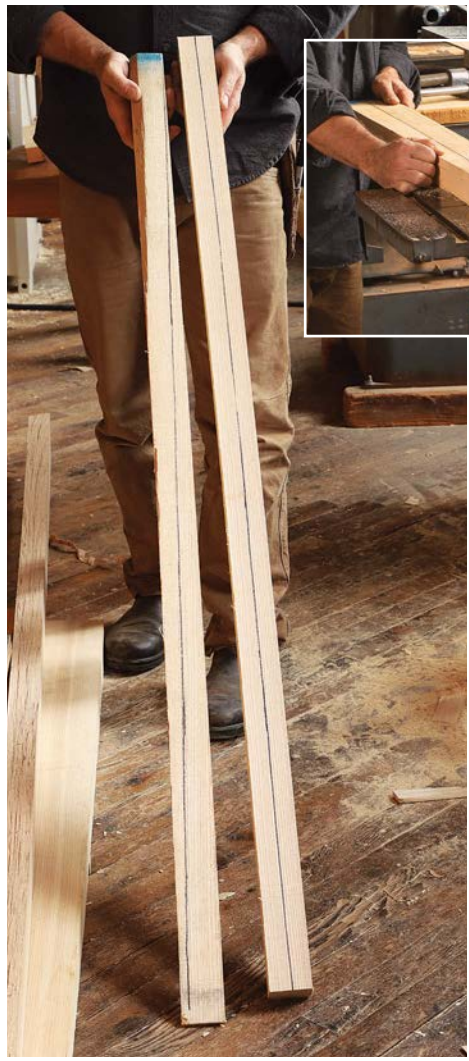
But learning to get riven wood from

STARTING WITH A SPLIT

FINDING LONG-FIBER PARTS IN KILN-DRIED PLANKS



Wedges find the fibers. *To create parts with no runout from a flatsawn plank, Galbert first splits the board, starting with a mallet and a hatchet, and gradually opening the split with wedges. The split, which locates the radial plane of the tree, tells Galbert how the fibers grew—and how far the sawn board was from following the fibers. Now he pencils a line parallel to the split.*



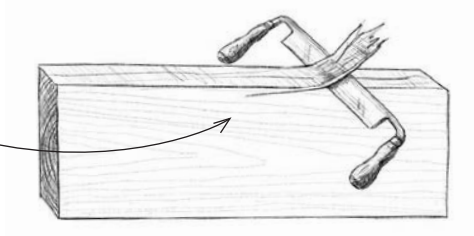
Saw along the fibers. *At the bandsaw, Galbert cuts on his pencil line, creating a workpiece with no grain runout.*

Observing the evidence. *A plank's edge grain can often be misleading. The mill-sawn edge (at left in the photo) of this ash plank indicates that the fibers are running at an angle. But the edge that's been split along the ray plane (at right) reveals that the fibers in this plank actually run straight from end to end.*

STARTING WITH A SHAVED EDGE

Find the fibers near the edge. *With woods that don't split well when kiln-dried—like the walnut Galbert is working here—you can use a drawknife to find the long fibers along the edge of the plank.*

A drawknife is a splitting tool, and it can find the radial plane along the edge of a flatsawn board. Pull toward the exposed end grain and it will track along the fibers.



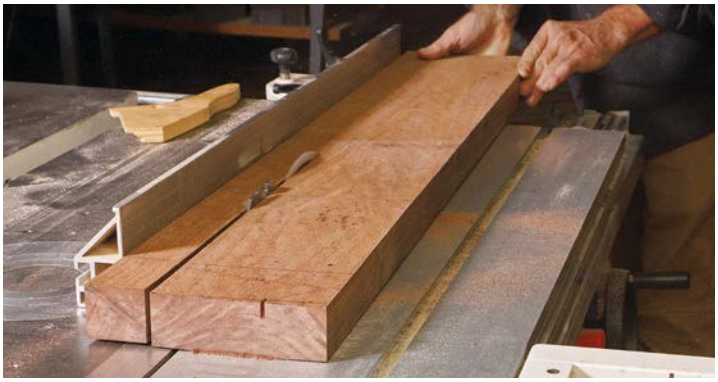
a board took lots of head scratching, busted up boards, and three-dimensional thinking. Looking at a sawn board can give lots of information. The way that the growth rings cut across the surface tells how the tree grew and how the saw sliced through it. The growth rings are very predictable and readable on the sawn surface because we know that each year the tree adds a new sleeve of material around the existing tree, like nesting dolls. But there is also lots of misleading information. For instance, on the face of a flatsawn board that has cathedrals at the center flanked by straight grain lines, the straight lines on the two sides are easily mistaken for following the fibers more than the cathedrals in the middle. They do look straighter, but this is only because you are seeing those growth rings edge-on, while the cathedrals depict the belly of the growth rings' curve. Yes, growth rings are one clue when selecting a board for getting riven parts, but there is another factor that is much harder to see.

The twisted truth about boards

Have you ever been planing a board with obvious growth rings that should plane well in one direction only to find it tearing out

TOP-NOTCH TURNING BLANKS

Machines can follow handwork. *Once the fiber line has been established by splitting or with the drawknife, you can joint that edge, then rip blanks of various widths. All of them will have straight fibers too. Table legs reap the same benefit as chair parts when made from blanks with no runout: superior strength, a smooth surface off the gouge, and predictable grain graphics.*



on one side of the surface? The reason is twist. The tree grew to some degree like a corkscrew, and when the saw cut a flat plane through it, the growth rings were revealed as expected, but each ring is made up of fibers that wrap around the core of the tree like a paper towel tube. This means that the fibers on each side of the board can ascend in opposite directions. Depending on the species, this twist can be imperceptible until you begin working the wood. I can say from having split hundreds of logs that twist is present to some degree in nearly every one.

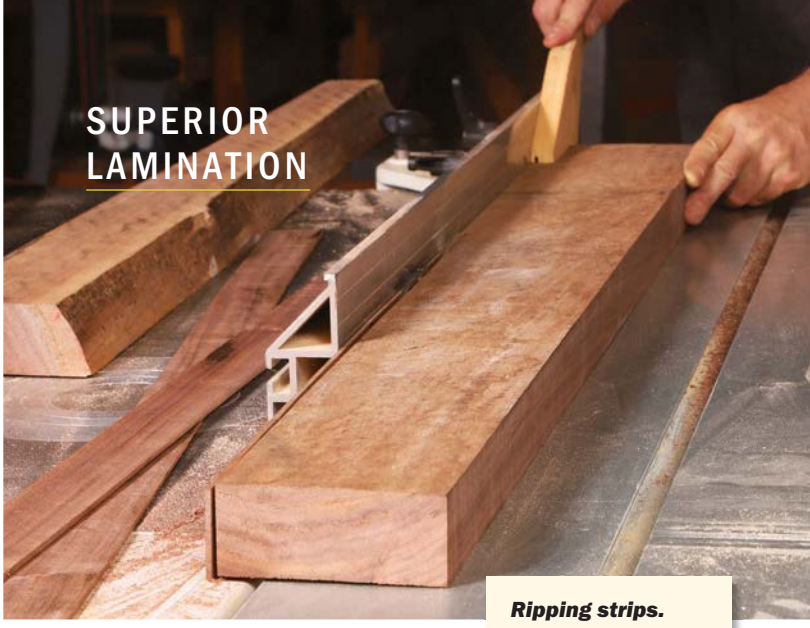
This turned out to be both the problem and solution to getting riven parts from a board. You might imagine that you could just look at the edge of a board and get all the information that you need about the direction of the fibers, but all this shows is how the saw interacted with the growth rings; and depending on the shape and position of the tree to the saw, it can be very misleading. The only information that I gather from the boards is from the growth rings visible on the face. This gives me half the equation. On split parts, growth rings only appear as stripes that run the entire length of the part, which is different than sawn parts, where the growth rings often appear cutting across the surface. But the length of the "cathedrals" on the face of a flatsawn board tells a great deal about how aligned the sawcut was with growth rings.

But what about the twist? When split from a log, the parts just follow the twist naturally, but when sawn, the twisted fibers become entombed in a shape that gives no clues as to their path or severity. I had to find a way to reveal it. Though it seems obvious now, the solution was strange enough that it took some time to realize it would solve the problem.

First, I split the board down the middle or shave the edge of the board to follow the fibers. Splitting works well on woods such as oak, ash, hickory, and maple; shaving works best with woods like walnut and cherry that don't split well. The split might run straight down the middle, but it usually runs out to one side or the other to some degree. Rarely will the split be perfectly in line with the sawn edges; this is revealing the effect of the twist, while also eliminating it.

Then I use the newly split or shaved edge as the reference surface to cut out the parts that I need. The added benefit of finding the fibers this way is that I can turn the parts on their side and cut along the newly revealed growth rings to finish the riving process. Unlike on sawn edges, where following the fibers can be very misleading, doing the same on either split or shaved edges provides an accurate view of the growth rings.

SUPERIOR LAMINATION



Ripping strips. *Even thin parts will have fibers running their full length. With their excellent strength and flexibility, thin strips that follow the fibers are well suited for bent lamination.*

Split, then saw. *After splitting a flatsawn kiln-dried plank along its ray plane, Galbert marks a line parallel to the split. He'll next cut along that line on the bandsaw.*

Account for the growth rings. *On the split face of the blank, the grain accurately reflects the direction of the fibers. On this part, they are slightly angled; Galbert marks the runout with a pencil and offsets the center points for the headstock and tailstock accordingly.*

Long and strong. *Having split the plank along its radial plane and compensated for misalignment in its tangential plane, Galbert has produced a part ideally suited for turning strong legs or spindles.*

FIBERS FOR TURNING

Blanks with unbroken fibers end-to-end make for the best turning. After splitting the part from a flatsawn plank, examine the grain lines on the split edge to assess the direction of fibers in the tangential plane. Mount the workpiece on the lathe with the growth rings on the split edge aligned with the axis of the lathe.

Selecting boards suitable for riving

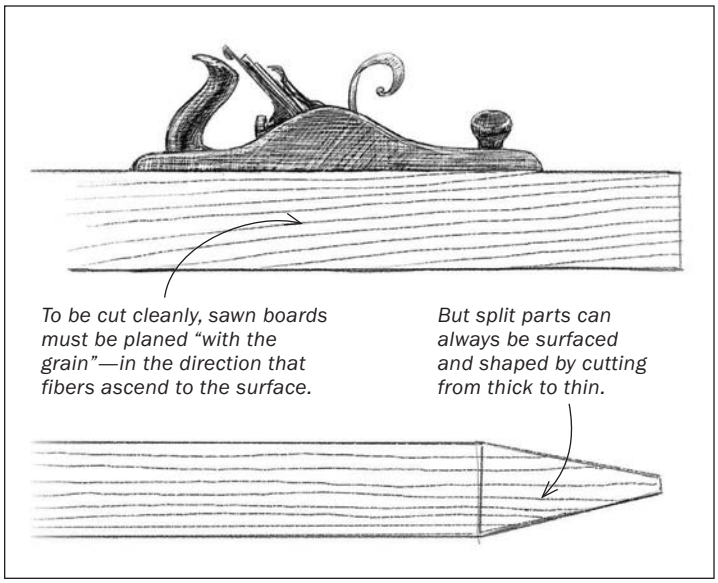
I buy flatsawn boards that are thicker than I will need for my final parts to help absorb any misalignment with the growth rings. The extent of this misalignment can be estimated by the number of growth rings visible on the surface of a flatsawn board. You might think quartersawn wood would be a perfect choice for getting riven parts; after all, you can see the layering of the growth rings clearly. But after further exploration I realized that the twist would cut across the thickness of the quartered board and unless you found a very thick quartered board that would still allow you to follow the twist on the edge, or found a board with zero twist, you would likely find it tough to get good results.

The flatsawn boards should have a straight centered growth pattern and large growth rings (faster growth is stronger in ring-porous hardwoods). You can expect that at least one end will be tough to get long riven parts from because of the way the tree swells at the bottom and the saw cuts across the rings; this isn't a deal breaker, but I try to focus on the upper portion for my longer pieces.

If I am going to use a drawknife to finish the shaping, I soak the rough riven parts in water for a couple of weeks. This softens the surface fibers and allows me to follow them closely. With ash, soaked parts shave just like the wood was green. Pre-soaking can also be helpful when steam-bending smaller parts, which, with their high ratio of surface area

Two turnings from the same plank. *The one on the left was turned from a blank sawn parallel to the mill-sawn edge of the plank. The one on the right was turned from a blank made by splitting the plank and bandsawing parallel to the split. Galbert split the turnings to see how the grain ran.*

FIBERS FOR FURNITURE MAKING



to mass, can absorb moisture nearly to their core. After soaking, I usually steam these for two hours.

Often, I bend parts in board form, after eliminating the twist. Depending on the bend, I try to follow the growth rings to ensure success bending. These larger parts won't absorb moisture deeply enough to make pre-soaking profitable, so I skip the soaking before bending. I usually steam them for 2½ to 3 hours.

One of the great benefits of riving is the increased strength and flexibility that you can achieve. Obviously this is necessary with chairs, which need to withstand the force of sitting, but it is also useful when making other thin parts that benefit from limiting runout, such as table legs, door and window mullions, and strips for bent laminations.

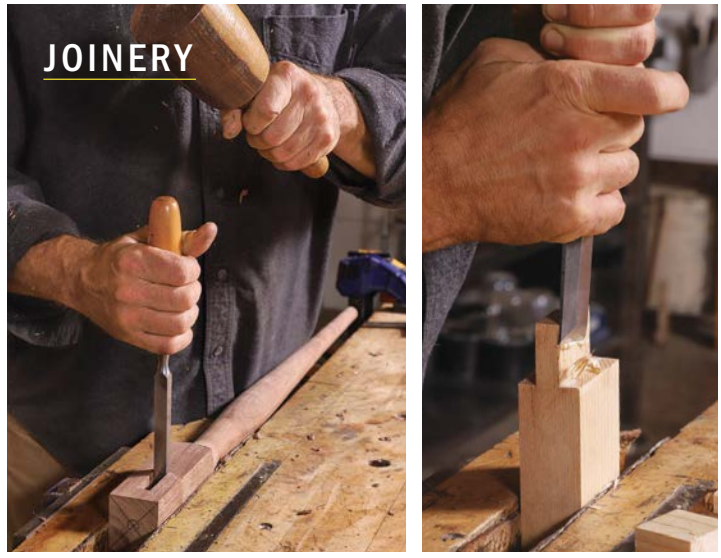
Riven parts can make milling or hand-cutting joinery easier. Chopping a mortise in a part that follows the fibers usually ensures that the sides of the mortise pare easily and cleanly because the exposed end grain is limited to the ends of the mortise. Likewise, tenons with no fiber runout are stronger and easier to shave.

Along with strength and workability, riven wood offers aesthetic benefits. When making unpainted pieces, I want the growth rings visible on the surface to harmonize with the design. Growth rings cutting randomly across the surface of parts can look busy and be distracting. Using riven wood for parts tones down the "action" on the surface, giving the overall form of the piece a more prominent visual role.

My education working with wood has been circuitous: starting with sticks, moving to boards, then to plywood, then to logs, and now back to boards. Early on, I wanted to use hand tools as much as possible, but when I was working with sheet goods at a production pace, it seemed inefficient and frankly a bit indulgent. But things have changed. Each starting point has informed how I see and work with the material. Now, I can understand and harness the strength and malleability of wood, using the tools I want, leaving me excited and empowered to get to work. □

Peter Galbert builds chairs and teaches woodworking in Rollinsford, N.H.

Surface work. *Finding the grain direction for handwork on a part with no grain runout is simple: just cut from thick to thin.*



Long fibers yield flat faces. *In parts with full-length fibers, chopping mortises and paring tenons is cleaner and more accurate. With no grain runout to contend with, mortise walls and tenon cheeks submit to the will of the chisel instead of the other way around.*

Good-looking grain. *A curved backrest cut from a blank with full-length fibers (like the one below in the photo) has a predictably symmetrical grain pattern that complements the curve. A part cut to the same shape, but from a blank with runout, creates a chaotic grain pattern.*

Carve an Acanthus Leaf

Thousands of years of history, and an actual plant, lie behind this classic design

BY MARY MAY

I often ask my wood-carving students if they have ever seen an acanthus leaf. Usually at least half of them say they've never even heard the word, much less seen the actual plant. I explain that it is the leaf that curls in layers around a Corinthian capital, the leaf that repeats along the edge of a mirror or picture frame, and the scrolling, curling leaf commonly seen decorating antique furniture; and they discover that there is an actual plant behind this common design with millennia of history.

This article's acanthus pattern is your entry point into that history. While this specific design is loosely based on the American Rococo bracket on a period fireplace in a 1780s home in Charleston, S.C., it's also informed by countless other carved acanthus leaves I've studied. After drawing different versions through the years by simply copying earlier designs, I discovered a loose mathematical approach. The easiest way to understand the details is to begin with a symmetrical leaf, like the one I carve here. From there you can create more curling, decorative leaves in endless variations. Numerous styles have adapted this leaf, and you should be no different.

If you do adapt your own, consider whether to use different gouges. I name specific tools for each step, but other designs, be they bigger, more ornate, or asymmetrical, may require gouges of other sweeps and widths.

A little on the leaf

The acanthus leaf grows in the rocky hills, woods, and grasslands of southern Europe, as well as in Asia and Africa. The two species that have most inspired designers are *acanthus spinosis* and *acanthus mollis*. They resemble a thistle with large, shiny, deeply lobed and pointed leaves, and they produce long spikes of white or purple flowers. They are so prevalent in some areas that they are considered a nuisance.

The first physical evidence of the acanthus leaf in architecture shows up in Greece around the 5th century BC, namely in the sharply pointed leaves of Corinthian capitals. From then on, the acanthus leaf clearly weaves through the art of countless historical art periods, sometimes nearly disappearing, but always re-emerging as a prominent design element. The Roman Empire eagerly embraced all the earlier Greek decorative arts, and it produced a richer, more flexible acanthus leaf with a more naturalistic feel. Overlapping lobes and sharply defined ripples in the leaf brought new boldness and life. The Byzantine Empire altered the design back to the sharply angled Greek style, preferring symbolism over the more realistic Roman designs. This strong tradition lasted for more than 1,000 years. Eventually the Romanesque, Norman, and Gothic periods rendered the leaf as highly stylized and barely recognizable for several hundred years.

After the Dark Ages, the Renaissance brought an exciting time of revival for classical ornamentation. The acanthus leaf re-emerged with new life and was again realistically formed and gracefully sculpted. Its beauty tended to lean toward order, rhythm, and balance.

Later, in a bold attempt to escape this orderly nature, Baroque artisans brought extravagance to their designs, and the acanthus leaf was no exception. Multiple layers of twisting, intertwining, climbing leaves often covered the interiors and exteriors of churches and palaces. This extravagance evolved in the Rococo period, when a lighter, more whimsical approach to design with more delicate, asymmetrical acanthus leaves, along with multiple S- and C-scrolls, decorated walls, ceilings, and furnishings. American styles also emerged during this time with design elements that borrowed acanthus styles from across art periods.

Across the 19th century, acanthus leaves reappeared in numerous revivals of earlier art periods, such as the Greek, Gothic, Rococo, and Renaissance styles. More recent periods, such as Arts and Crafts, Art Deco, and Art Nouveau, showed little evidence of acanthus leaves in their designs.

However, I'm confident it will come back. After all, acanthus leaves adorn newly made tapestries, architectural details, and furniture, even if these items are designed in a traditional vein. It just goes to show that this remarkable leaf has inspired us for thousands of years, and it's showing no sign of withering away.

Mary May teaches carving at marymaycarving.com.

Saw out the blank

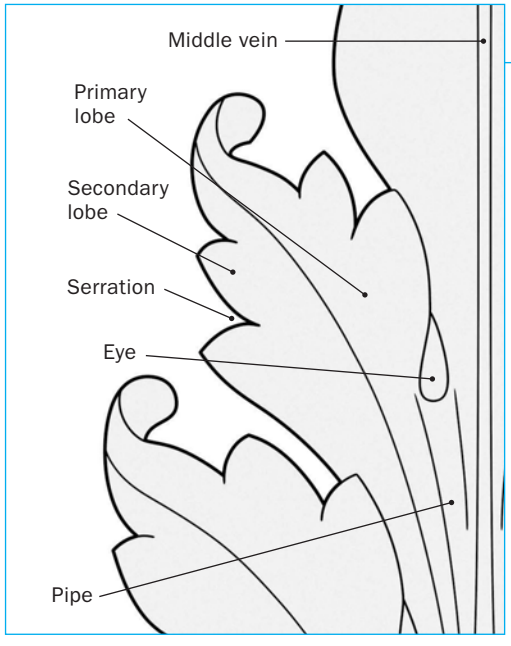
Online **Extra**

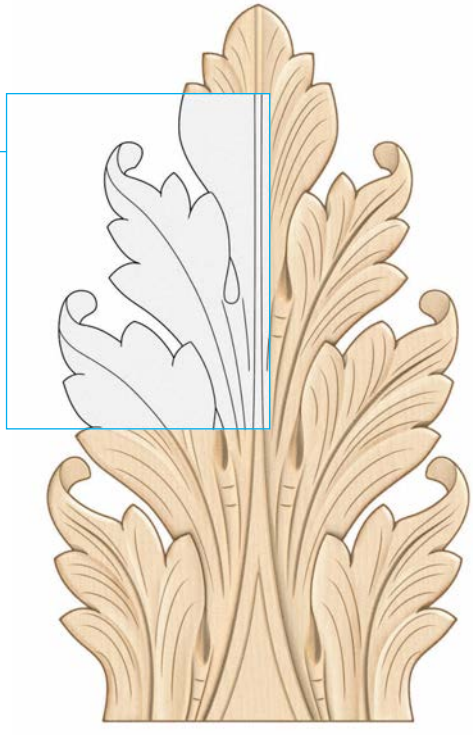
Download May's pattern, or better yet, learn how to draw your own at FineWoodworking.com/309.

Use carbon or graphite paper to trace the design onto your carving blank. *Note that the tracing has less detail, like veining, than the finished carving. This is because the initial carving would remove many of those details.*

Saw out the blank. *Cut as close to the perimeter as possible. You can use a bandsaw or fretsaw, but May prefers a scrollsaw for its combination of ease and control.*

A LEAF'S LEXICON

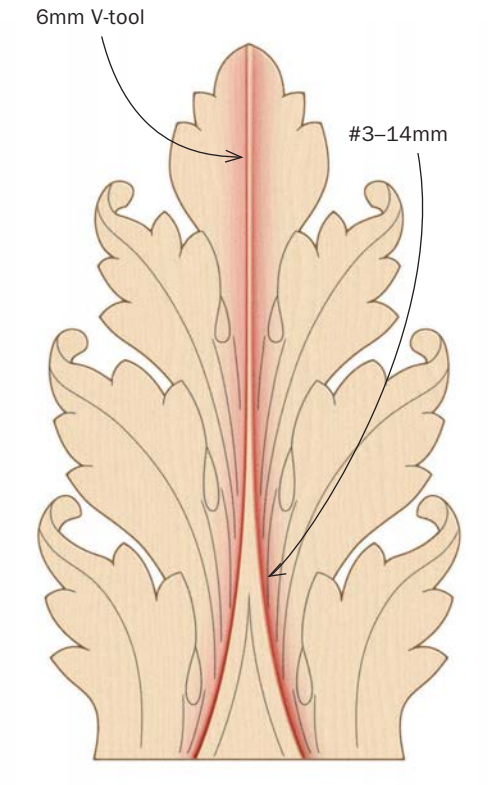




Photos: Barry NM Dima; drawings: Christopher Mills

Secure the blank to a backer board with double-sided tape or a paper joint. *This lets you clamp the backer board rather than the carving, giving you full, unobstructed access to the leaf.*

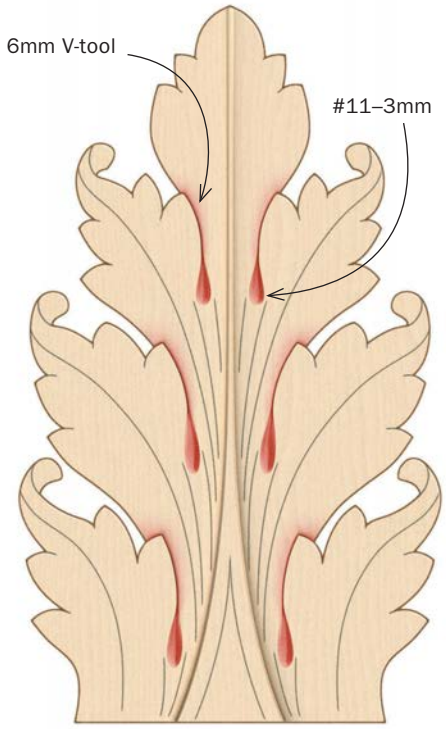
Carve the middle vein



Use a V-tool along both sides of the middle vein. *These cuts should start 1/16 in. deep but get shallower as they reach the tip of the leaf. Make several passes to reach the full depth and ensure clean, sharp edges.*

Lower the leaf near the middle vein. *Use a #3–14mm gouge, holding it bevel down while gently rounding it away from the vein until about ¼ in. into the leaf. A bench chisel held bevel-down will also work.*

Define secondary lobes and eyes



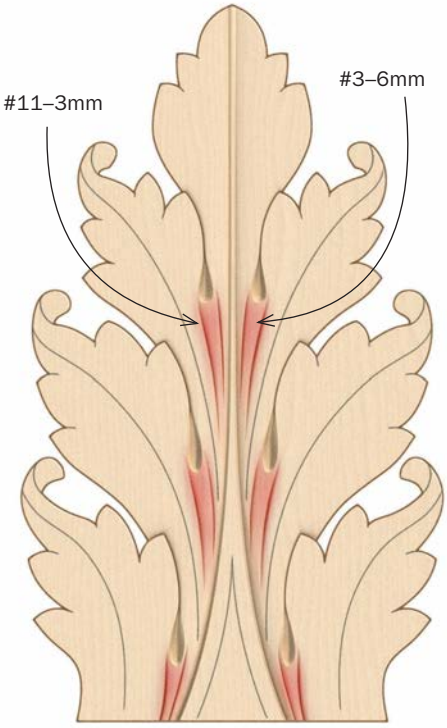
Use a V-tool where the secondary lobes overlap. *Cut from the center of the eye and along the edge of the overlapping lobe. Make sure you leave the line visible, and that you cut on the side of the lower lobe.*

Form the curved bottom of the eye before extending the walls. *Hold a #11–3mm veiner at 45° for the curved, lower end of the eye. Then carve each side of the eye with a #3–6mm to complete the teardrop shape. These cuts should be at a slight angle so they meet at a sharp corner.*

Define the secondary lobes' upper edge. *Make a vertical cut directly on the line. Use a #5–14mm for the longer sections and #3–6mm for the smaller sections. These cuts should connect with the eye's walls.*

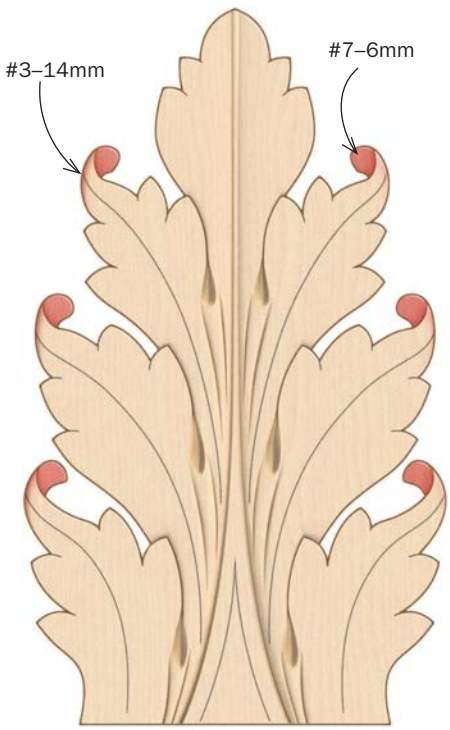
Lower the lobe. *Use a #3–6mm gouge. These cuts create the illusion that the lobes overlap.*

Carve the pipes



Carve along the pipe. *With a #11–3mm gouge, make two sweeping cuts down the leaf to define the pipe. These cuts should start on either side of the eye, and converge as they reach the middle vein (top). In this design, these cuts also extend and curve around the eye to begin shaping the leaf detail. Round over any sharp corners with a #3–6mm gouge (bottom).*

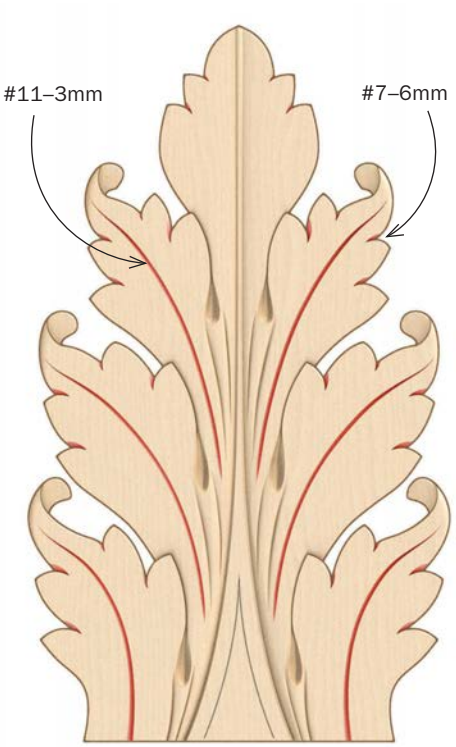
Curl the leaf tips

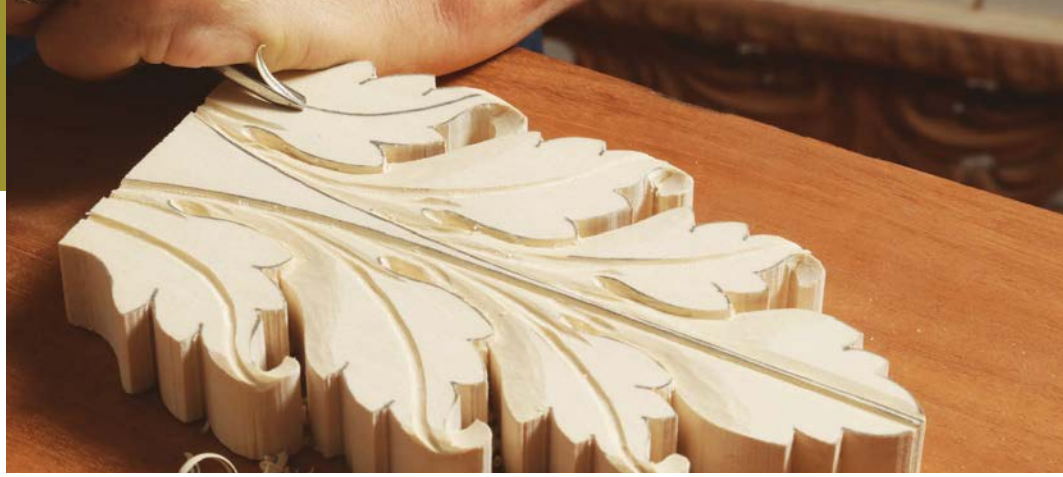


Round over the outer edges of the curling leaf. *Use a #3–14mm and mind the grain direction. Take multiple smaller slices to maintain control.*

Lower the leaf. *Using a #7–6mm, start with a vertical stop cut along the layout line (left). Follow up by angling the gouge 45° and carving toward the stop cut (right) so the leaf tip looks like it's curling under.*

Veins and serrations

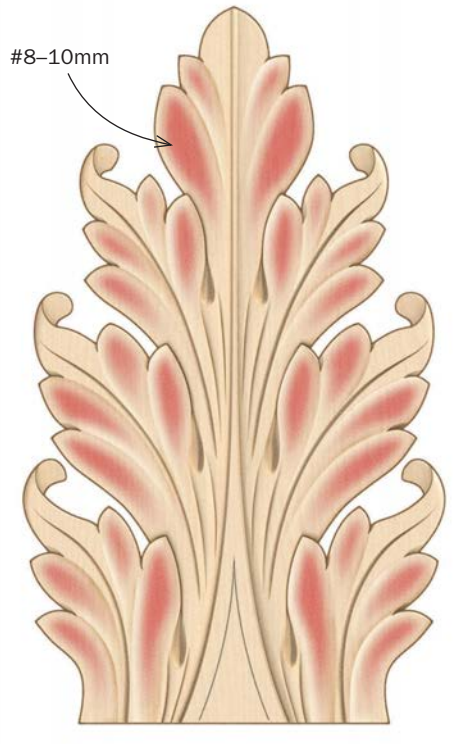




Carve the primary lobe's center vein. *Using a #11–3mm gouge, make sure this line curves in a natural, pleasing S shape as it follows the lobe's own curl.*

Notch the serrations using a thumbnail cut. *Carve these serrations with two cuts using a #7–6mm. Start with a vertical chop that continues the serration into the leaf, then angle the gouge to remove a small triangular chip. This should give the appearance that the lobes slightly overlap.*

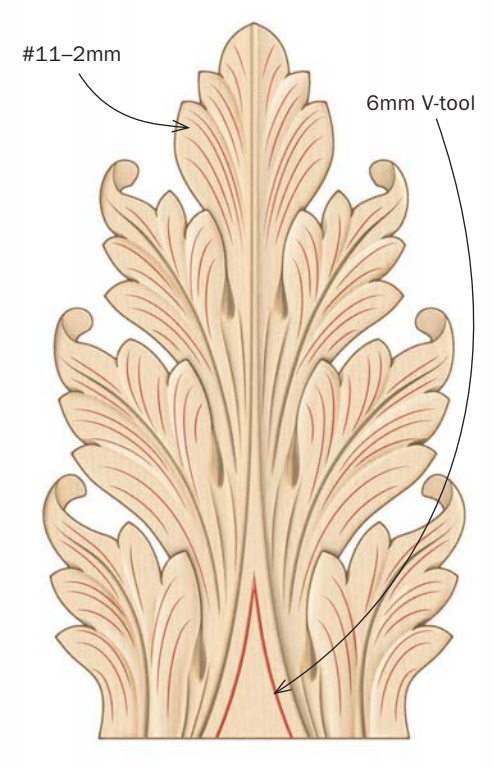
Add depth to the lobes



Hollow the lobes. *The #8–10mm gouge's sweep creates good dimension in the lobes. Lower the middle of the lobes in multiple passes if necessary to maintain a clean, crisp surface. The lobes' sharp, raised edges should follow the curve of the leaf and gently flow toward the base of the leaf along with all other lines.*

Be mindful of grain direction. *Don't hesitate to turn the gouge around to cut in the opposite direction if the grain dictates it. You can also take rolling, slicing cuts for an improved surface, and to protect edges from breaking.*

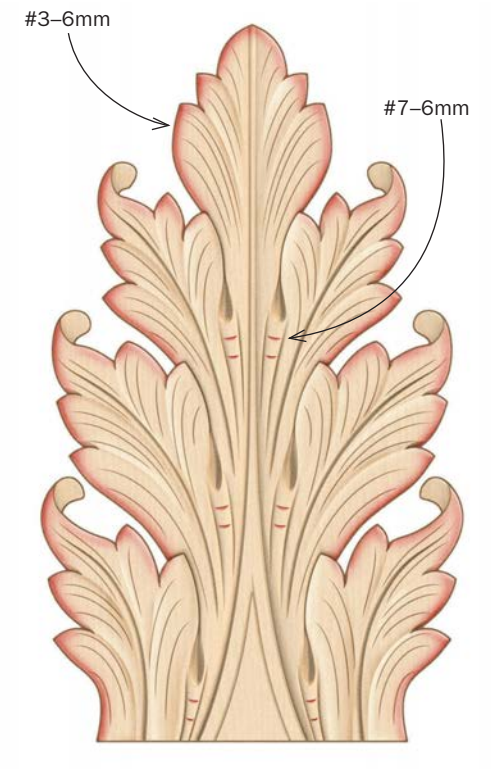
Carve the final veins



Create the veins in each lobe. *Use a #11–2mm and make sure the veins curve gently down the leaf and fade off without overlapping.*

A V-tool forms the central V. *This swooping inverted V, cut on the middle vein, breaks up the otherwise large, flat central area.*

Round the leaves, wrinkle the pipes



Soften the leaves. *Using a #3–6mm, which is a fairly flat gouge, round the outer edges of the leaves so they look like they're folding away. Also slightly round the edges where they overlap the lower lobes.*

Use thumbnail cuts below each eye. *Use a #7–6mm to cut a pair of wrinkles under each eye using the two-step thumbnail cut. These should get slightly smaller as they go down the pipe.*

Traditional Tansu

Pinned finger joints and shopmade copper hardware distinguish this Japanese-style cabinet

BY LEN CULLUM

Tansu have long fascinated me. In fact, a tansu in an antique shop window contributed greatly to my taking up serious woodworking. Something about all of those drawers and doors spoke to me, not only of function but of potential. Like the pages of a brand new sketchbook, it's not the empty drawers that make a tansu compelling, but what you might fill them with. The particular tansu that inspired this build is called a *ko-dansu*, or personal storage chest. What all of the drawers were intended for I have no idea, but the proportions and layout appealed to me. While the original was built from kiri (paulownia), I'll be building this one from Port Orford cedar. Enough talk, let's build a tansu!

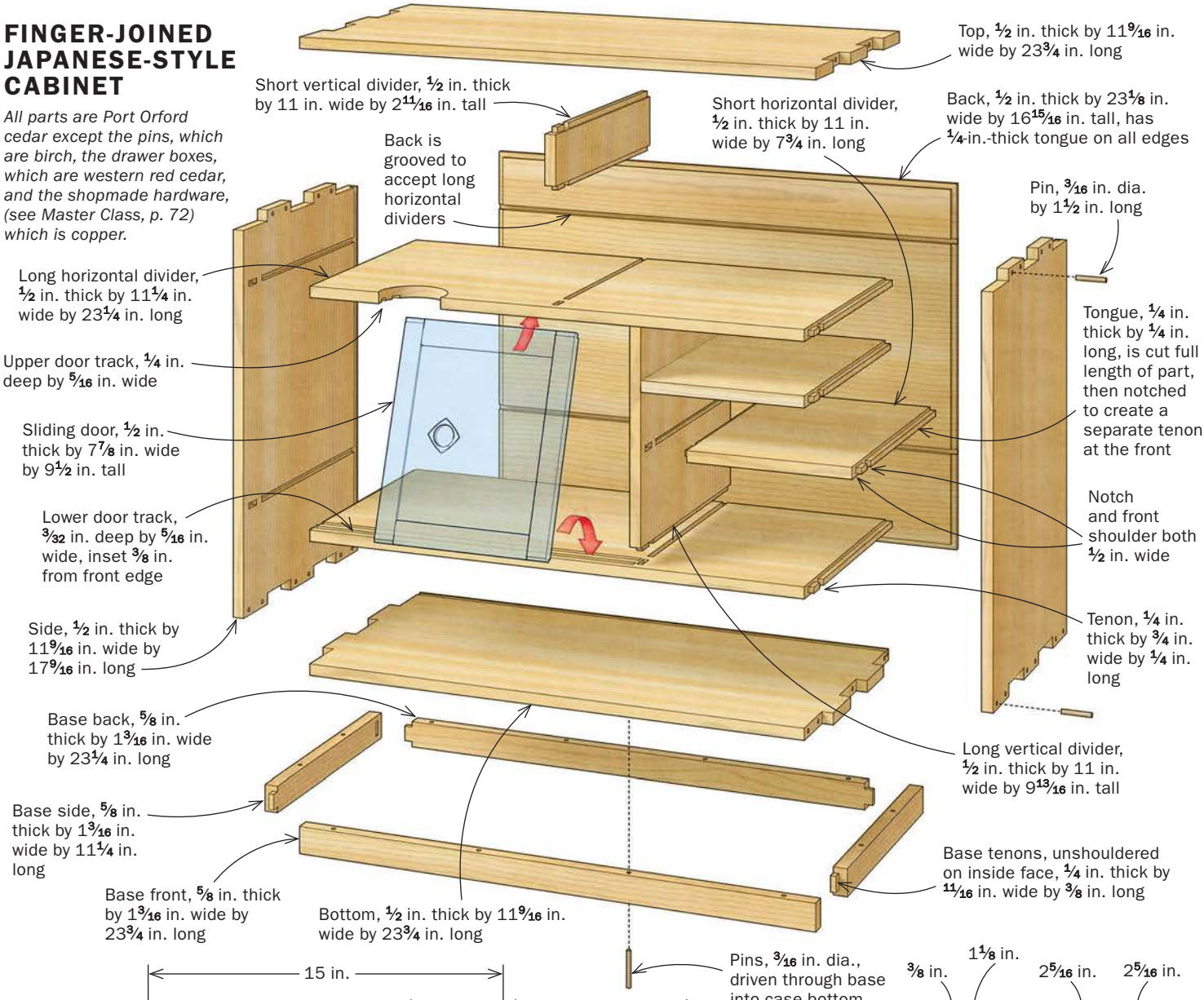
Finger joints

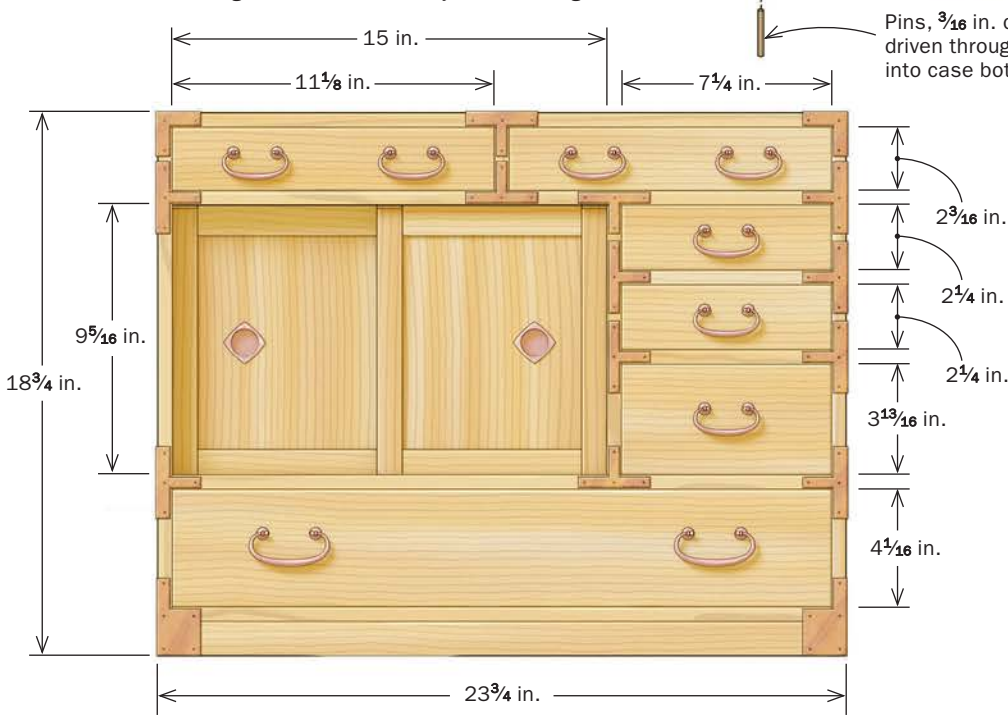
The carcases of box-style tansu like this one (as opposed to frame-and-panel style) are commonly constructed using wide, pinned finger joints, and almost always have five fingers per corner. The fingers are typically cut in opposition at the top and bottom corners, and because keeping track can get confusing, it's important to mark which fingers will be removed and which will stay.

Photos: Jonathan Binzen; drawings: John Hartman

FINGER-JOINED JAPANESE-STYLE CABINET

All parts are Port Orford cedar except the pins, which are birch, the drawer boxes, which are western red cedar, and the shopmade hardware, (see Master Class, p. 72) which is copper.





FRONT VIEW

SIDE VIEW

Finger joinery

FIRST CUTS

Symmetrical slots. *At the table saw, having set a stop block guided by his layout, Cullum uses a miter gauge to make the initial finger cut on one of the two-fingered joints. To cut the mirroring slot, he'll next rotate the workpiece so the opposite edge is against the stop block.*

The central issue. *After resetting the stop block, Cullum makes the two center kerfs.*

FAUX FINGER

Make it fit like a glove. *Cullum uses a cutoff from one of the case boards to find the stop-block setting for cutting the central finger on the three-fingered side of the joint. Then, having removed waste from the center gap in the two-fingered board, he tests the fit.*

Slotting the case side. *With the stop block's new setting, Cullum cuts the slots on both sides of the central finger.*

I lay out all of the fingers with a square. The case sides are ½ in. thick, but because I want a little overhang to plane off later, I make the fingers 9/16 in. deep. At the table saw, I carefully set up stops and make cheek cuts for both ends of the top piece and the bottom ends of the side pieces. Before cutting the cheeks for the mating fingers, I use an offcut the same width as the case pieces to reset the stops. To make shoulder cuts at the edges of the boards, I use a miter gauge at the table saw; for the shoulders between fingers I use the bandsaw followed by hand chiseling.

When all of the joints are cut, I dry-fit the four sides and double check the inside dimensions. I also make reference marks showing the location of the dadoes that house the back panel. These help keep track of inside/outside, front and back on all four parts.

FINAL FITTING

Open shoulders. *On the two-fingered joints, where the shoulders are accessible, Cullum cuts them at the table saw with the workpiece on edge.*

Inside job. *For shoulders that can't be table sawn, rough out the waste at the bandsaw. Then pare to the baseline with a wide chisel and a 90° guide block.*

Interlace the case. *With the finger joints complete, Cullum tests their fit.*

Tongues and tenons

The interior case parts are all joined with a Japanese variation on the tongue-and-groove. A continuous tongue is cut first. Then a notch is cut through the tongue creating a ¾-in.-wide tenon that helps with assembly and keeps the parts from drifting over time.

Using a scrap piece and the dado stack on the table saw, I dial in cuts to create a tongue that is ¼ in. long and ¼ in. wide. I cut tongues on the ends of all of the internal parts, and then modify the tongues by cutting a ½-in.-deep front shoulder and then the notch that creates the separated tenon at the front. Once all the parts are cut at the table saw, I finish the notch with a chisel.

I use my trim router with a ¼-in. bit to make all of the dadoes and mortises for these joints. Because I prefer to chisel my dadoes and mortises square instead of rounding the tenons, I stop a little shy of the lines and finish up with a chisel.

To the back

Here I depart from typical tansu construction. Traditionally, the back panel of a tansu is fitted beneath the top and nailed directly to the back edges of the carcase. This causes some wood movement issues, and it's not terribly attractive. Since this tansu will likely be seen from all sides, I chose to cut a tongue around the back and let it into the case.

Next, I dry-assemble the carcase with the back in place. Then I transfer to the back the location of the dadoes in the sides for the long horizontal dividers. Using those marks and a ¼-in. dado

Divider joinery

TONGUES

Tongues to start with. *The interior joinery begins with all the dividers in the case getting tongues cut on their ends. The long horizontal dividers also get tongued along their back edges.*

Tongues become tenons. *A notch cut through the tongue creates a separate tenon at the front of the joint. This aids in accurate assembly and keeps parts from drifting over time.*

stack, I cut dadoes across the back for the horizontal dividers.

Before moving on to make the sliding doors, I cut the tracks for them in the case top and bottom. At the table saw I use a dado stack and the stop-and-drop method to cut them. I cut the tracks just slightly short, and then I fit the vertical divider into place, mark the track ends with a knife, and finish up with a chisel.

The glue-up

I do the glue-up in two stages. First I glue all the interior parts and the right side. When they have cured, I add the rest of the carcase and the back. When clamping the sides, it helps to have full-length clamping cauls to help keep everything flat and prevent the unsupported finger joints from drifting inward.

When the glue has cured, I remove the clamps and drill for the pins. Each finger gets two 3⁄16-in.-dia. wooden pegs. While tapered

GROOVES

Grooving jig. *Cullum's routing box (top) provides a square fence for his trim router to ride along as he cuts grooves for the short horizontal dividers. He routs to his end lines by eye, and lifts and plunges again to cut the in-line mortise at the end of the groove.*

Squaring up. *After chopping the ends of the grooves and mortises square with chisels, Cullum tests the fit.*

BACK WORK

Fit and mark. *Having grooved the case parts for the back and rabbeted the back to create a tongue to fit the grooves, Cullum dry-fits the carcase. Then he transfers the groove locations for the two long horizontal dividers onto the back.*

Grooving the back. *Using the marks he just made, Cullum cuts grooves in the back to accept the long horizontal dividers. Locking them into the back makes the case rigid and keeps the long dividers from deflecting.*

wooden nails are preferable, they can be difficult to find; regular birch dowels will suffice. Taking the whole case to the drill press, I drill pin holes 1¼ in. deep. I cut the pins 1½ in. long and, using a pencil sharpener, chamfer one end. While it's tempting to skip this step, it makes the insertion of the pins easier, and lessens the risk of damaging the surrounding surface. After using a toothpick to lightly apply glue inside the hole and to the pin, I tap them in. When all are in on one face, I clean off the glue and cut off the excess before moving to the next side. When everything is cured, I plane the pins and the fingers flush.

I make the base next, and when I glue up the mortise-and-tenon joints connecting the four parts of the base, I use the finished case as a pattern. When those joints have cured, I glue and pin the base to the case, leaving several inches on each side of the back corners unglued to accommodate some movement of the case.

SLIDING-DOOR TRACKS

Careful tracking. *Cullum uses the drop-and-stop technique to cut the stopped grooves for the sliding doors. Achieving precise spacing and depth is critical. The top slots are cut slightly deeper to allow the doors to be lifted up to clear the bottom of the case when they are being inserted or removed.*

Scribing the square end. *Cullum dry-fits the vertical divider to ascertain the exact end point of the door tracks. After scribing, he'll chisel the tracks square.*

Two-stage assembly

1 ***Assembling the innards.*** *In the first stage of assembly (above and at right), Cullum glues up all the interior parts and the right case side.*

2 ***Adding the outside.*** *With the cabinet's interior all glued up, Cullum assembles the finger joints and inserts the back, bringing together the entire case.*

Doing drawers

Tansu drawers are built differently from their western counterparts. They have pinned joinery at the corners, and the bottom of a tansu drawer, instead of being slotted into grooves, is pinned directly to the bottom of the drawer box. In use, the whole bottom is supported by the dust shelf beneath it. This kind of cross-grain attachment can be problematic in wider drawers, so for the three wide drawers, I made bottoms composed of two or more pieces tongue-and-grooved together so they can expand and contract. I also used high ring count, very dry, vertical-grain western red cedar.

The first step is to verify the fit of each drawer front, and determine the orientation. Because I can be a bit of a grain nerd, I try to keep everything oriented in the same direction as it came from the board; that way when light hits it, no piece will reflect differently from the others. The fronts should be snug, but not super tight. (Pro tip: Do not push them all the way flush, as they might be extremely difficult to get back out. Trust me on this.)

Once all of the fronts are oriented and marked, it's back to the table saw for rabbeting. I rabbet both ends and the bottom edge of each drawer front, and then, using a chamfer plane, I cut a 45° chamfer along the inside top edge of the drawer front.

With all the drawer parts made, it's time to drill for pins. Using tape, I assemble each drawer dry, then do all of the pin layout, and drill. For drawer joints, I typically use two pins near the top. This not only strengthens the weakest part of the drawer, but I also think it looks cool. The pins I use are actually 3/32-in.-diameter toothpicks. I cut them in half, so each toothpick yields two pins.

When all of the holes are drilled, it's time to start gluing. Leaving the tape attached to the bottom, I remove the bottom and set it aside (noting its orientation). Next, I release the tape on one joint and open the drawer fairly flat. After applying glue to the joints, I pull the tape tight and drive in pins dragged through glue. When one side is pinned, I cut off the pins, then repeat on the other side. Next I run a bead of glue around the perimeter of the frame, re-tape the bottom, and drive its pins. Because this process takes a little time, I recommend using a glue with an extended open time. Apply clamps and set aside. When all of the glue has cured, pull the tape and plane the drawers to fit.

With the drawers complete, I move on to the mortise-and-tenon, frame-and-panel doors. To make the mortising of these small parts safer and the glue-up easier, I leave the stiles an inch or more over length on both ends until after assembly. Because these are light doors, be conservative with the amount of glue you use. A very light wetting on the tenon and a light coat in the mortise is plenty. If squeeze-out can be avoided, it should be. I insert two rails into one stile, slide in the panel dry, then carefully tap on

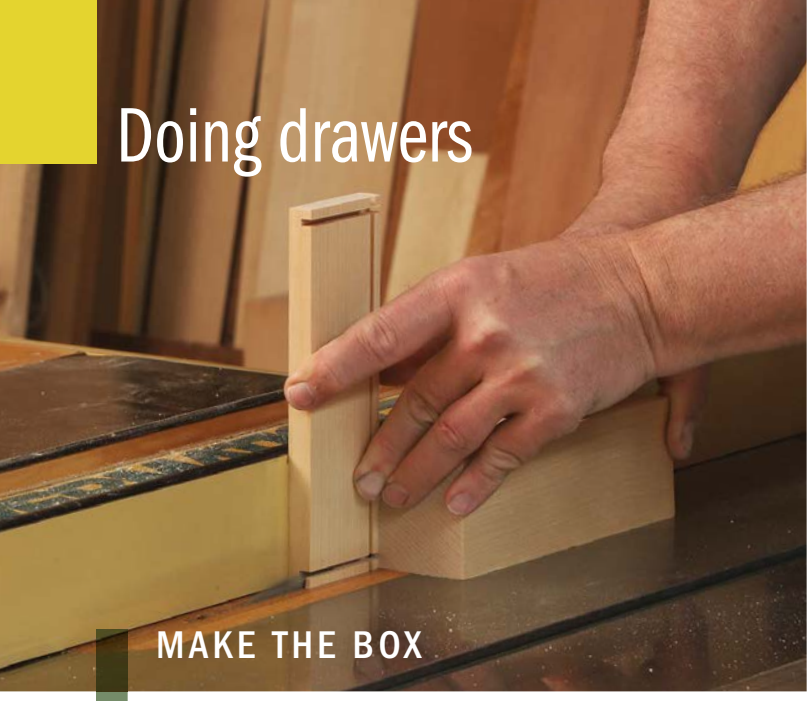
Pin the fingers

Drilling for the pins. *When the glue has dried, Cullum takes the cabinet to the drill press to bore holes for the finger pins.*

Good point. *Cullum chamfers one end of each pin using a pencil sharpener. With 40 pins it's a lot of sharpening, but the chamfers make insertion easier and prevent damage to the surrounding wood.*

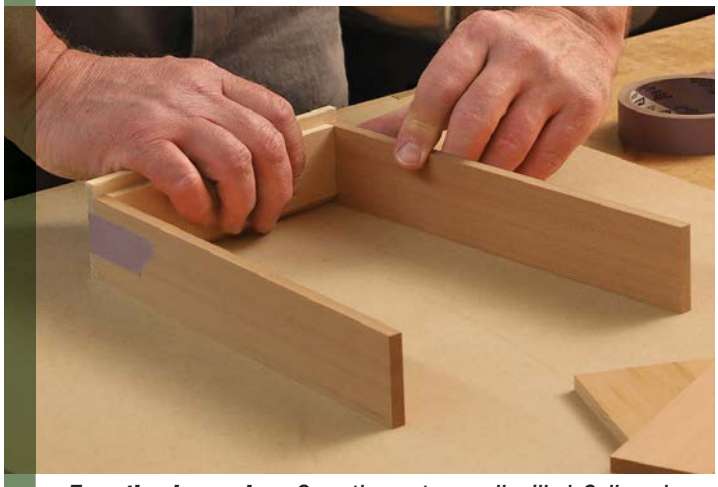
Sufficient pins. *Although ideally Cullum would prefer to use tapered Japanese wooden pins, they are hard to source; in their absence, he says, "birch dowels will suffice." When the glue is dry, Cullum flushes the pins and the fingers to the surface of the case.*

Doing drawers

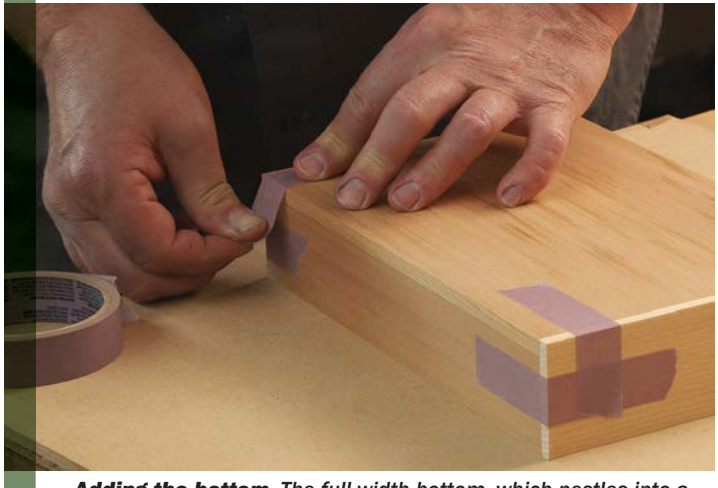


MAKE THE BOX

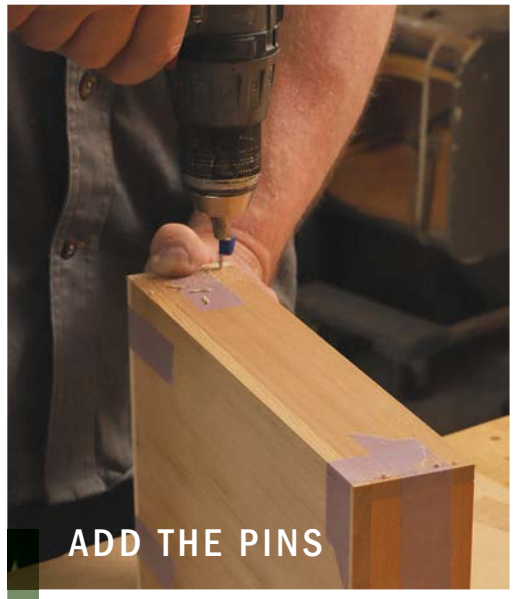
Rabbet the fronts. *To make clean rabbets on the ends and bottom inside edge of the drawer front, Cullum first makes passes with the workpiece riding flat on the table saw, then completes the rabbets with passes made with the part riding on edge against the fence.*



Tape the drawer box. *Once the parts are all milled, Cullum dry-assembles the drawer box, clamping the corners with tape.*

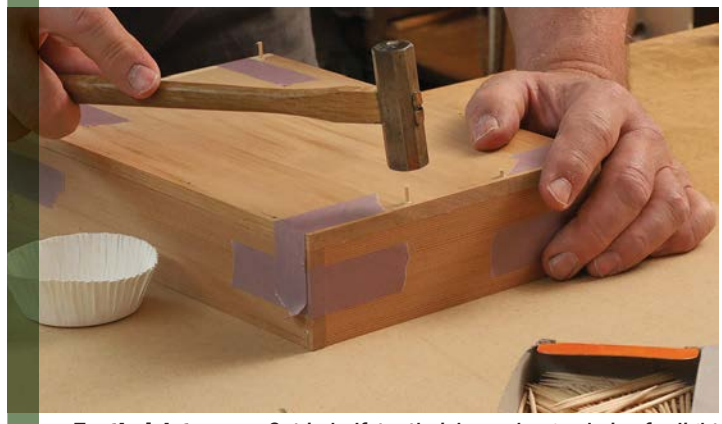


Adding the bottom. *The full-width bottom, which nestles into a rabbet on the drawer front, is taped on next.*



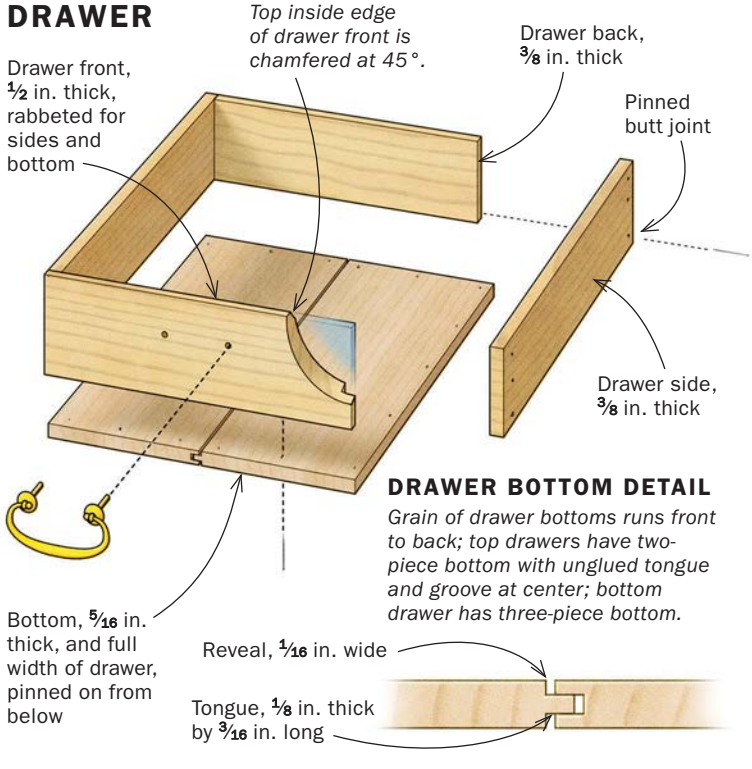
ADD THE PINS

Pin holes. *With the drawer fully dry-assembled and taped, Cullum drills holes for the pins at the corner joints and around the bottom.*



Toothpick tenons. *Cut in half, toothpicks make good pins for light tansu drawers like these.*

DRAWER



DRAWER BOTTOM DETAIL

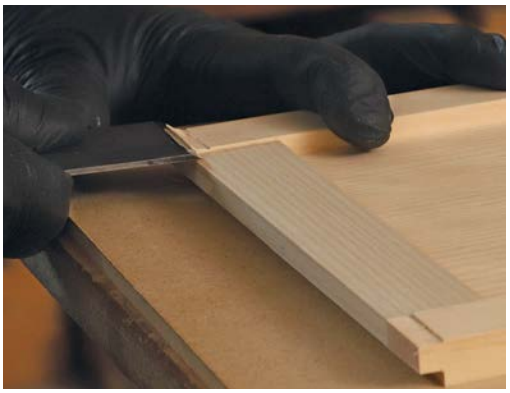
Grain of drawer bottoms runs front to back; top drawers have two-piece bottom with unglued tongue and groove at center; bottom drawer has three-piece bottom.

Assemble the sliding doors

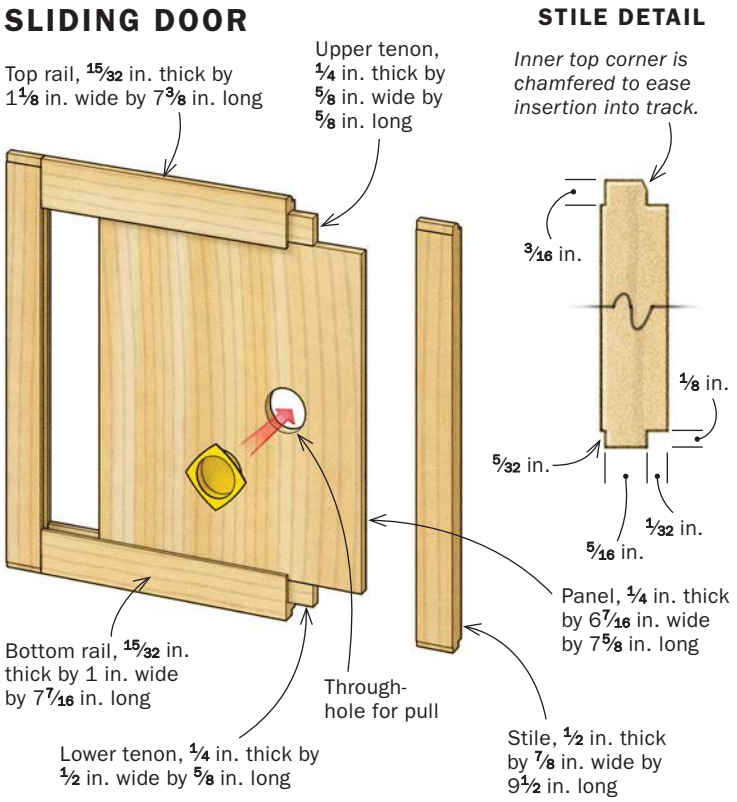
Too long is very good. *Cullum makes the door stiles over length, which prevents problems when cutting mortises near the end of a part, and is also convenient at glue-up. He'll trim them after assembly.*

Trim the stiles. *Before assembly, the door rails are rabbeted to fit the tracks. Here, post-assembly, after sawing the stiles to length, Cullum notches the stiles to match the rabbets on the rail.*

Chisel follow-up. *Some judicious chopping and paring cleans up the sawn rabbets on the stiles.*



Longer tongue. *The door's upper end gets similar treatment, with stiles notched to match the rabbet in the top rail. The rabbet is wider here, however, making it possible to lift the door into the upper track and drop it down into the lower one.*



the other stile, making sure the panel edge doesn't bind. Then I clamp, measure for square, and let cure. When the glue has dried, I saw away the extra material on the stiles and cut rabbets at the top and bottom of each stile to match the rabbets on the rails. Last, using a rabbet plane, I adjust the fit of the doors until they slide freely (a little wax in the grooves helps a lot). □

Len Cullum works wood in Seattle, Wash.

Back bevel. *The tolerances are tight on these doors, and to make them easier to insert and remove, Cullum chamfers the upper inside edge of the top tongue.*

Add Paint to Pop Your Work

Color opens design possibilities and makes a piece stand out

BY EVAN COURT

A distinctive design carries the designer's "voice" or personal style. I've cultivated my own through learning design fundamentals and trial-and-error. I've experimented extensively with painting furniture, and found that, done right, paint adds not just color, but textural and geometric interest as well. Of course, it pays to be intentional. Pairing the right color with the right wood, choosing the right paint type, and applying it skillfully can transform by-the-numbers designs into works of art.

Start with the finish

After establishing the form and function of a piece, it's never long before my mind wanders to the question "What about the paint?"

I first establish where I want it. I might paint a table's aprons while leaving the top bare, or vice versa. I'll paint parts of a leg, perhaps breaking the height of the piece into thirds and stopping the paint about a third of the way down. Take your time planning, and consider how you want the paint to balance with the rest of the piece. My goal here is entirely aesthetic, but there's a practical benefit to planning since I can figure out where it's possible to prefinish.

Applying finish to a piece isn't usually wholly considered until assembly, but I find that when dealing with intersections between painted and clear areas it's helpful to determine how painting and construction can work together. In some cases, you can paint entire components, and perhaps clear-coat others, before glue-up and assembly.

Perfectly placed pop. *Furniture doesn't have to be only brown and beige. With paint, your color options are limitless. Let the form and function of the piece help you decide which parts to paint, much as you do when selecting the grain for different parts of a piece.*

Photos, except where noted: Amanda Russell

Dividing lines. *One option is to use paint to visually break up a piece. Here, Court uses flat white to offset the pronounced grain on the top and drawers. Painting partway down the legs helps accent their gentle outward curve.*

Color individual components. *Using paint on whole parts of a piece, like a tabletop or the seat of a chair (top right), highlights form, structure, and use. Paint high-touch areas to heighten the character of patina over time.*

Play with angles and shapes. *Since you're already outside the box with paint, don't limit yourself to straight and square transitions. Here, Court used a bevel gauge to lay out dramatic terminations.*

Furniture photos courtesy of Evan Court

Score and tape transitions

Knifing transitions and tucking the tape into the knife line creates a more seamless, more durable transition than simply taping off the area alone.

Knife and chisel for clean transitions. *Court scores deeply with a utility knife to create a cavity for the tape to tuck into. Score parts before assembly when possible. If the knife isn't cutting it, Court deepens the score with a tap or two on a wide chisel. He turns the bevel away from the surface he intends to paint.*

Prepare your canvas. *Sand the surface to 180 grit and ease the edges with 320 grit to allow for proper paint adhesion.*

Now it's time to select wood species and paint. Not all woods accept paint in the same way, and not all types of paint get along with all woods. Although I am no stranger to bolder colors, I typically pair lighter-color woods, like ash or maple, with a white or cream paint. Maple is very easy to paint over because of its tight grain. Conversely, ash requires far more applications and labor between coats due to its coarse and open grain. Paint settles in wood pores similarly to varnish and other clear finishes, so if you are looking for less texture, open pores must be filled to achieve a level final coat.

Closed-grain woods allow for a broad selection of paint options. I have used a wide variety of paints, from acrylic enamels and latex paint thinned with water all the way to artist-grade spray paints. Yet, I still find myself regularly reaching for traditional milk paint, with which I've had great success. Milk paint has wonderful pore-filling qualities and a visually appealing texture. It's also forgiving and easy to work with. Applied well, it will patina beautifully with use. And no primer coats are needed with milk paint.

The paint color you choose is completely up to you, but remember that the color of any wood left unpainted must be considered. When using bold paints, I first choose my primary wood and generalize it as a color so I can use color theory to make a paint selection. For example, if my primary wood is cherry, it's safe to consider it as red or a very warm orange. From this point I can identify the colors that work well with red, such as green, which is complementary. Very light-color woods, like soft maple or basswood, are perfect to combine with paint, offering great latitude in the colors they pair well with because they are closer to white or a neutral beige than anything else, much like a blank canvas.

Sharp transitions, clean results

Painting furniture soon presented me with two problems: creating crisp transitions and preventing flaking. Blue tape alone won't produce a consistently crisp line, and even if it did, simply taping and painting leaves the paint layer higher than adjacent unpainted

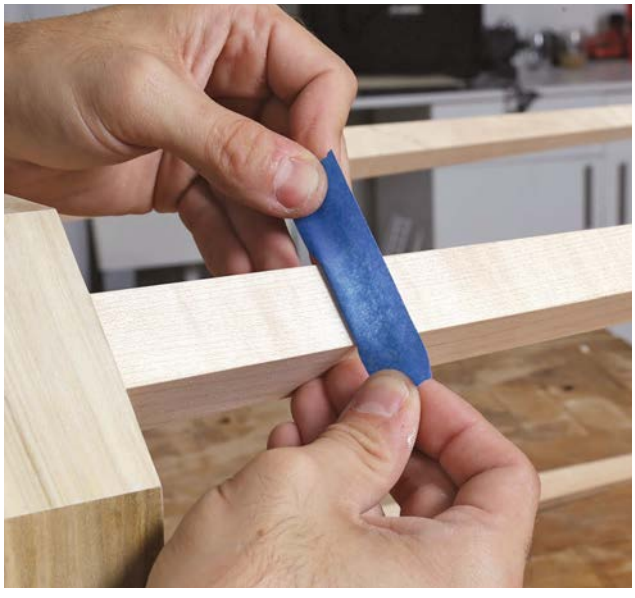
surfaces, making it prone to flaking. My solution has been to knife or chisel transition lines, then carefully tuck the tape into them. The score line serves as both a cavity and a dam for the paint. As a result, the transition is both stronger and cleaner.

Once I have decided where to terminate the paint, I establish the knife lines. I use a square to wrap knife lines around square parts, and a bevel gauge for angled parts.

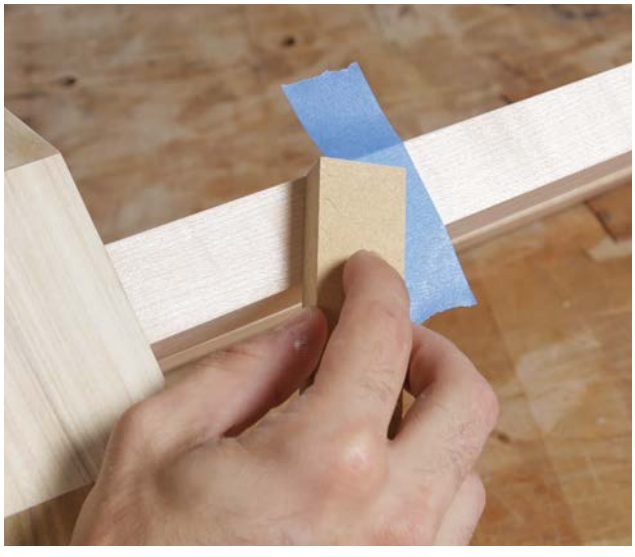
I use a good quality blue tape. One roll goes a long way, and the extra money spent on better quality tape is worth it. I carefully tuck blue tape into the knife lines and burnish it with a plastic palette knife.

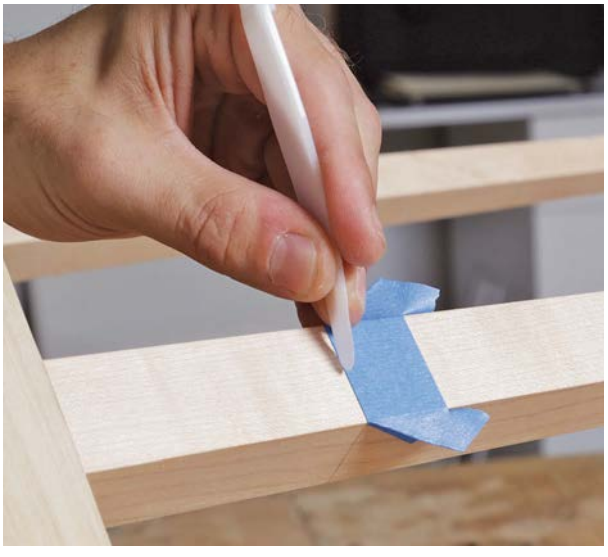
When knifing, be bold. The deeper the knife line, the easier it is to get the tape seated inside it. I prefer a good box cutter instead of a marking knife because it leaves a slight bevel on each wall of the knife line. On harder woods, I will occasionally use a chisel to set the knife lines deeper.

Establish boundaries. *Tape off any edges you don't intend to paint, even after assembly if necessary, being sure to press the tape down with a piece of MDF. There's no need to knife anything when the unpainted surface is not in the same plane as paint.*



Tuck the taut tape into your knife line. *This will ensure a much sharper and bleed-free transition between paint areas and clear areas and protect the paint from flaking.*





Flatten the tape and press it down with a block of MDF. *Use a flat block to ensure it adheres well to the wood. Then burnish down the tape in the knife line with a plastic palette knife. The eased edge of the knife can firmly press the tape into the knife line without cutting it. Fold back any excess tape.*

Paint to perfection

Court favors milk paint for its usability and its interesting texture. You can also mix your own, making custom colors as attainable as stock ones.

Mix the milk paint to your desired viscosity. *Adding milk paint powder to a container and then adding water gives you more control over the mixture. Aim for a heavy-cream consistency. Once you find the right ratio, let the mixture sit overnight in the fridge.*

Mask off unpainted surfaces. *Using craft paper, cover any surface you don't want to accidentally splash with paint.*

Apply two to three coats. *Using a foam brush ensures a smooth application. Brush away from the tape to prevent any paint from pooling in your knifed lines. Follow with strokes along the grain to help fill the pores. Lightly sand between coats for a smoother finish.*

Fine-grit scuffs to finish. *Once you've applied sufficient coats of paint, gently rub the surface with 320-grit sandpaper or a green Scotch-brite pad. The pad is great for hugging curves.*

TIP

EASIER TAPE REMOVAL

Gently pull the tape away from the paint line to keep things tidy. A couple seconds of low heat from a hairdryer melts the adhesive so the tape doesn't tear the grain.

Wrap any areas that will remain natural with craft paper to guard them against accidental splashes of paint. Use a foam brush to apply the paint. Brush away from the transitions to avoid a buildup of paint at the tape. Brushing with the grain helps to fill the pores and create a smooth finish. Leave the tape on until you're satisfied with the results. Take care when pulling off the tape; it tends to pull up and tear the fibers, especially after burnishing. To prevent this, use a hairdryer or heat gun set on low to gently heat the tape and melt its adhesive before lifting the tape.

Finally, I apply Danish oil to the clear finished areas. Begin by finishing just the unpainted areas. Once the finish is dry, apply a second coat to the entire piece. □

Evan Court is a furniture designer and craftsperson in Dallas, Texas.

Clear coat the bare wood, then the painted wood. *Apply one to two coats of Danish oil up to the painted surface, then coat painted surfaces. This prevents any loose paint from getting into the clear-coated surfaces.*

gallery

Inspiration for our readers, from our readers

DOUG FEICK

Culver, Ind.

Doug's high school friend, an avid fan of vinyl records, needed a console for his record collection. Because the friend has multiple sclerosis, he needed a cabinet that could accommodate a wheelchair and allow him to easily access his albums and place them on the turntable. The leg construction and technique was modeled after Christian Becksvoort's methods in building his Shaker candle stand ("Shaker Round Table," *FWW* #239).

WALNUT, 18D X 42W X 25H

ROBERT G. FERREE III

Clemmons, N.C.

Having always admired the pillar-and-scroll clock, Robert decided to make one when he found a detailed plan. This was his first attempt at reverse glass painting, in this case a depiction of the Clemmons Moravian Church in Clemmons, N.C.

CHERRY, POPLAR, AND PINE, 5D X 17W X 29H

Photo: Suzanne Neuschaefer

LORAN BOHALL

Indianapolis, Ind.

The Estrada chair was designed to be modern and minimalist, with a nod to American Western aesthetics. Loran, owner of Bohall Design and Fabrication, is deeply rooted in a family legacy of woodworkers and horse trainers, and this chair draws inspiration from the leatherwork found in tack rooms. Studying saddles and bridles, Loran seamlessly integrated his love for leatherwork into the piece.

WALNUT AND LEATHER, 30D X 26½ W X 35H

Photo: Fieldmate Studio

JIM MURTHA
Lancaster, Ohio

Jim had always been fascinated by Queen Anne cabriole legs and wanted to make a piece incorporating them. After retirement, he decided to tackle the lowboy in Phil Lowe's *FWW* #201 article. The plans from the article and related video were indispensible in providing guidance and developing the skills needed to complete the project. Jim says, "I am deeply thankful and indebted to the late Mr. Lowe for sharing his knowledge with the *FWW* readership and the woodworking community at large."

WALNUT, CURLY SOFT MAPLE, HARD MAPLE, 18D X 32W X 31H

Photo: Chris Russell

JOHN HARTMAN
West Springfield, Mass.

This plant stand was loosely inspired by British Arts and Crafts plant stands. They are much lighter than the ones made by American Arts and Crafts builders such as Stickley. John wanted to design a light, functional piece of furniture with splayed legs. He had a piece of straight-grained 8/4 riftsawn white oak that was perfect for the legs. The heart-shaped cutout was inspired by Nancy Hiller's "Voysey Two-Heart Chair," *FWW* #301.

WHITE OAK, 12D X 12W X 32½H

JUAN-MANUEL PINZON
New Rochelle, N.Y.

Juan-Manuel had been moving the walnut boards he used for this shelf back and forth across the country since 2017. Rather than continuing to move the boards separately he decided it was time to piece them together so he could move them all at once. The bonus? Between moves the boards now hold books.

WALNUT AND MAPLE, 10D X 36W X 32H

Photo: Josh Blankfield

Show your best work

For submission instructions and an entry form, go to FineWoodworking.com/rg.

PETER W SPRAGUE
Sanibel, Fla.

Peter's daughter wanted something she could use for her anticipated grandchildren when they came to visit. A combination rocking chair and cradle seemed appropriate. Peter admires Sam Maloof's work, and this piece has many of his design characteristics.

WALNUT, 42D X 53W X 52H

JOHN BARFIELD
Toledo, Ohio

John's inspiration for this piece came from his previous experience as a conservationist working with 17th-century Spanish *vargueno* writing and storage cabinets. Additionally, and more recently, English designers Ernest Gimson and Alan Peters designed work in the same form, and their pieces also influenced John's work. The brass escutcheon and hasp allowed John his first foray into metalwork.

WALNUT, HICKORY, AND BIRCH, 15D X 25W X 46H

JACK CERCHIARA
Seattle, Wash.

The goal of this project was to balance curves and sharp angles in the top, legs, and accent curves. To continue the theme of contrast, Jack juxtaposed walnut and maple. This piece was inspired by the work of James Krenov and neo-traditional Japanese design, and includes a twist on traditional Arts and Crafts breadboard ends.

QUARTERSAWN WALNUT AND QUARTERSAWN CURLY MAPLE, 22D X 15½W X 29½H

master class

Shopmade tansu hardware

BY LEN CULLUM

Brace yourself. *Cullum made all the plates, corner braces, and other hardware for his tansu. Many vintage tansu have iron hardware, but on smaller cases, copper was sometimes used. Cullum used sheet copper to make the plates and bracing as well as the doors' finger pulls. He shaped copper rod to make the drawer pulls.*

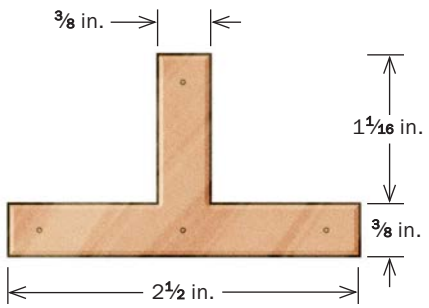
Photos: Jonathan Binzen; drawings: John Hartman

Certain types of tansu, made to be moved around frequently, would sometimes have their joinery reinforced with corner braces and strapping hardware. Tansu hardware was commonly made from iron, but many smaller pieces used copper. I chose copper for the tansu in my article ("Traditional Tansu," p. 52). Iron hardware can be purchased in the States, but copper hardware is difficult to find outside Japan, and I decided to make my own. Although this is Master Class, I wouldn't call myself a master of this--just a guy who fumbles around and finds ways to solve for x. Once I figured out the path, however, the processes were surprisingly simple and the results were extremely gratifying.

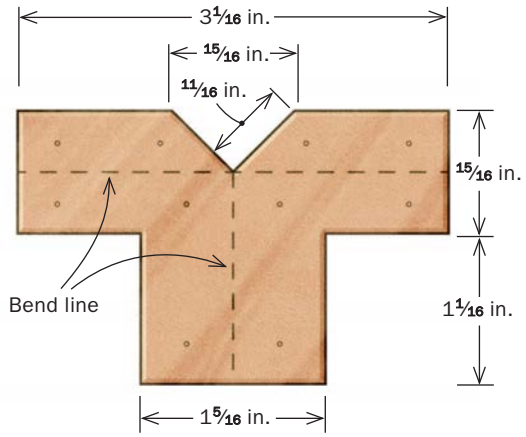
Which finish?

My early meetings with tansu were with antiques, and to me there was something just fantastic about their wear and damage and patina. It gave them a warmth and life that captivated me. Much later, on a trip to Japan, I saw a brand new tansu, and it left me a little cold. While the craftsmanship was in every way exquisite, it just didn't speak to me in the same way those old, well-used ones did, and it occurred to me that

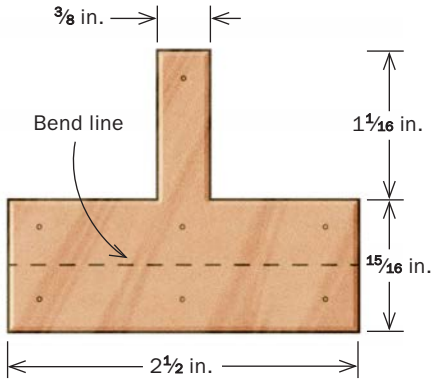
STRAPS AND BRACES



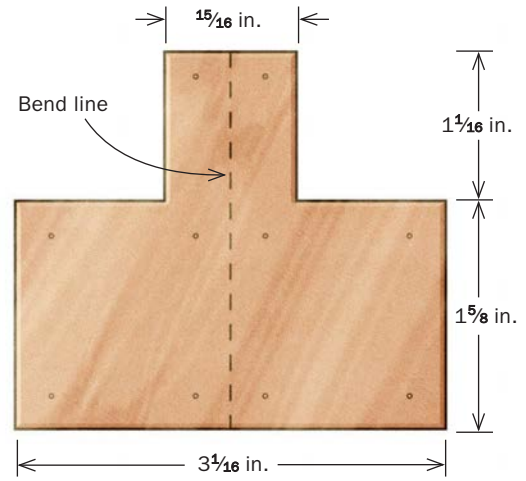
T-STRAP



TOP CORNER BRACE



BENT T-STRAP

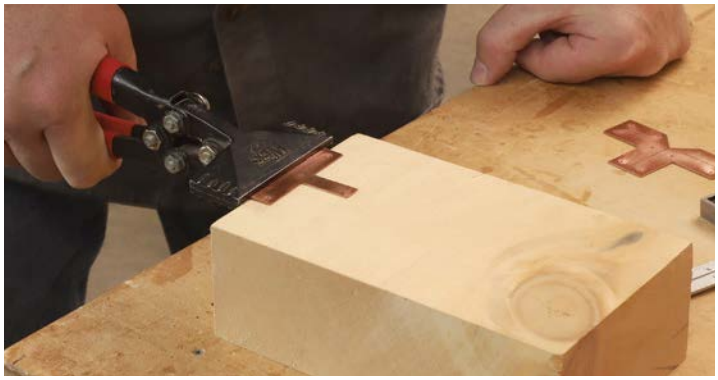


BOTTOM CORNER BRACE

Drill for nails. *Plates and braces are affixed with escutcheon nails. With the protective plastic sheet still on the copper blank, lay out the holes and mark each one with a nail punch. Then bore the holes at the drill press with a hardwood block for backup.*

Abrade the bracing. *After drilling, remove the plastic and flat-sand the hardware with 400-grit paper on an MDF sanding block. Then file the edges slightly round.*

BEND BY HAND



Hand brake. *If you're using a hand seamer to make the bends, place the workpiece so the bend line is just shy of the seamer's jaw, and bend upward. Try marking and bending test pieces beforehand to get a feel for the process.*

Sharpen the fold. *The hand brake creates a rounded corner. To square it off a bit, clamp the workpiece to a square-edged anvil and shape it using a hardwood caul and a hammer.*

Clean the copper. *Before installing the hardware, polish its surfaces.*

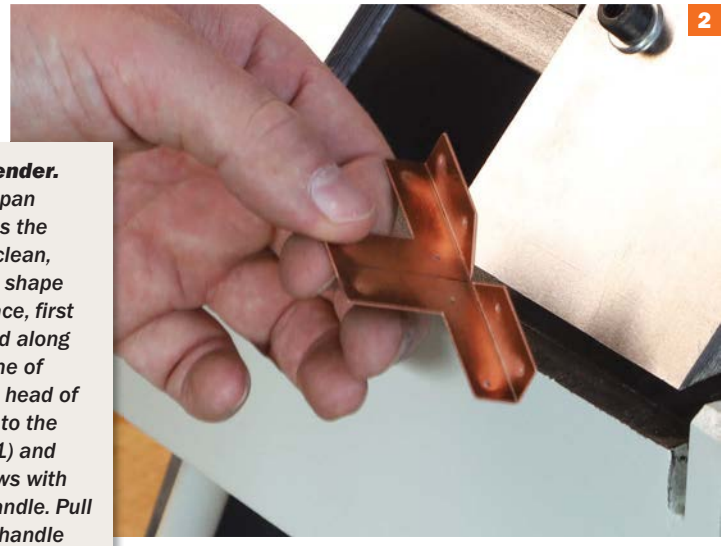
my love of tansu had just as much to do with their entropy as it did with their proportions and designs. That's why I chose to use raw copper for the hardware on this piece. Traditionally, it would be treated with a coat of urushi lacquer and then heated to produce a glossy brown finish. I left mine unfinished to allow the visual aging of the piece to proceed unabated. If my client hadn't requested an oil finish, I would have left the wood on this piece untreated as well.

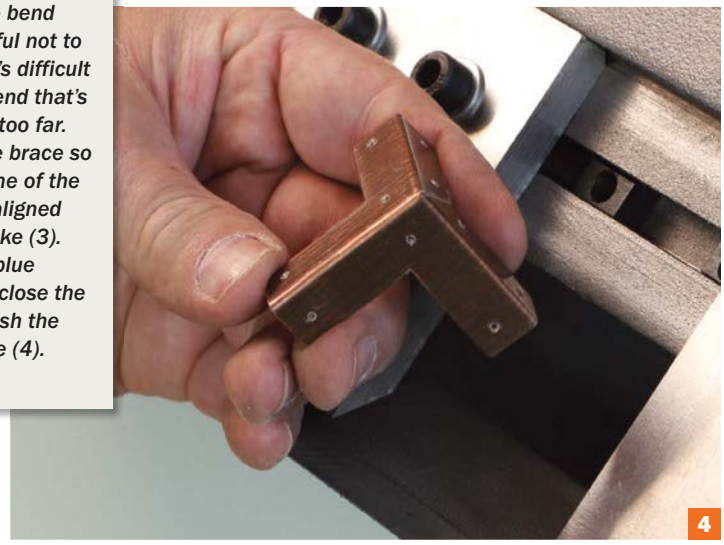
Strapwork

I used 22-gauge copper sheet to make all the corner braces and strapping. While I originally planned to use snips and cut the blanks out by hand, I really struggled to keep the copper from curling, and once it did curl, to get it flat again. My solution was to have the blanks cut with a water jet. It was costly—about $200—but I justified the cost by having four 12-in. by 18-in.

Nail it. *Cullum used ¼-in.-long #18 solid copper escutcheon pins to nail on the copper hardware. Solid copper pins are sold in Japan, but are hard to come by in the United States. Brass pins, easier to find, look different initially, but match the copper more closely as they patina over time.*

USE A BRAKE





A potent bender. *A benchtop pan brake makes the folds crisp, clean, and easy. To shape a corner brace, first make a bend along the centerline of the notched head of the T. Insert to the centerline (1) and close the jaws with the black handle. Pull up the blue handle to make the bend (2). Be careful not to overbend; it's difficult to open a bend that's been taken too far. Reinsert the brace so the centerline of the T's stem is aligned with the brake (3). Pull up the blue handle and close the notch to finish the corner brace (4).*

sheets stacked and cut at once; this provided me with enough parts for half a dozen similar tansu cabinets.

Once the blanks were cut, the processing was pretty simple: Drill the nail holes, form the corner pieces using a small pan brake, then file and sand the edges smooth. Lastly, polish away the tarnish left by the cutting process.

Warabite drawer pulls

Drawers on traditional tansu often have bails made in a style called warabite, for its resemblance to the curling shape of bracken shoots. My original plan was to hot-forge warabite bails from copper rod with a hammer. But after much practice and many attempts, it became clear I'd need several more months of practice before I could approach the consistency I would need to make them all match. So I tried a different route: At a strip sander, I sanded rod stock to a double-tapered shape, then bent it over a form.

I started by measuring some antique handles and making a wooden bending jig. Because I was thinking about working copper the same way I worked steel, I heated up a copper rod and tried it out. The jig worked well, but the hot copper burned into the wood much more quickly and deeply than I had expected. Unless I wanted to remake the jig repeatedly, I'd need a different solution. So I decided to have a bending form laser cut from a bar of ¼-in.-thick stainless steel. This worked great, but soon after, I realized that the copper worked nicely cold, so I could have used the wood form after all. (On the upside, I now have a bending jig that will outlast me.)

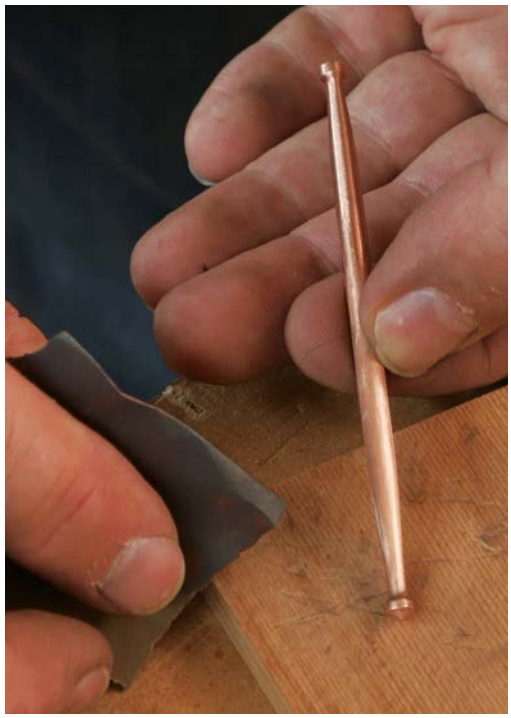
For the smaller drawers, I made bails from lengths of 3⁄16-in.-dia. copper rod; for the large bottom drawer, I used ¼-in.-dia. rod. After cutting the rod to length, I made reference marks for shaping. Then, using a 1-in.-wide belt on the strip sander, I roughed out the double taper, frequently checking the narrow diameter with calipers and leaving a knob at each end of the

DRAWER PULLS

Tapering copper rod. *To make the bail, Cullum rotates a length of copper rod against the strip sander. He creates two tapers with a full-diameter section between them.*

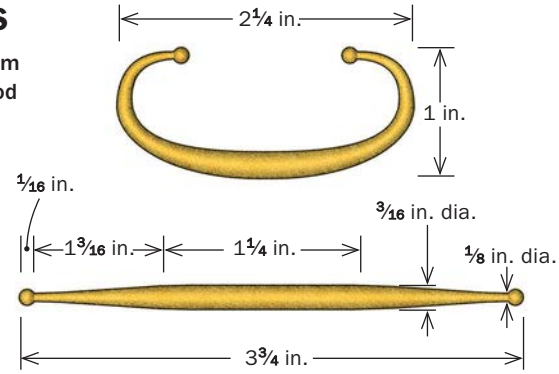
Round the knob. *Having left a small section full-size at either end of the tapered bail blank, Cullum twists the rod to round the ends.*

Abrasive cleanup. *Smooth the bail's surfaces by hand-sanding with 400-grit paper, and follow that with Scotch-Brite pads.*

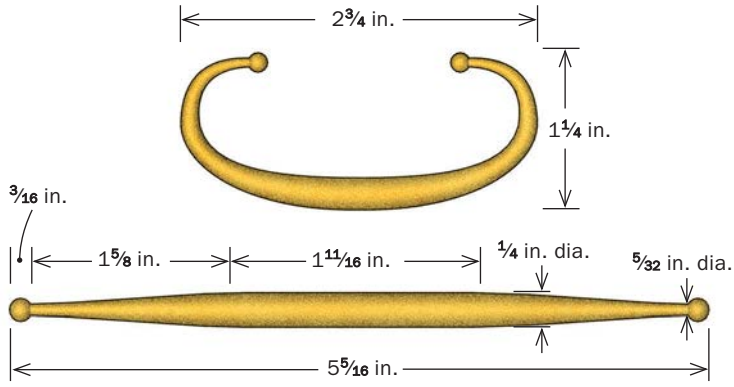


BAILS

Made from copper rod



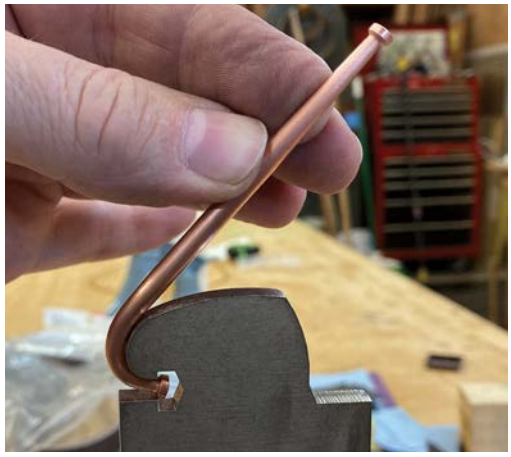
SMALL BAIL



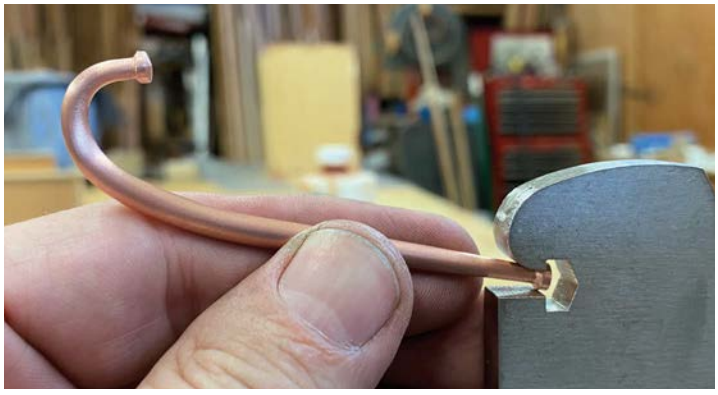
LARGE BAIL

Persuading the copper to bend. *The thicker copper rod will bend more easily and take a more graceful curve if you first anneal it.*

DRAWER PULLS CONTINUED

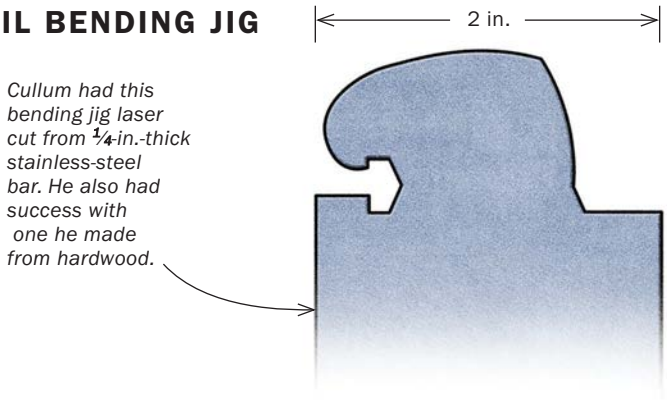


Hand bent bails. *The tapered copper bars bend smoothly and easily over the jig, yet are plenty stiff enough to hold their shape. Because of copper's softness, it's key to make sure the jig's surface is smooth so it doesn't leave texture on the finished bail.*



The bail gets finished and fixed. *After completing the bend, Cullum polishes the bail, then adds at each end a cotter pin with a customized copper washer. He gives the washers their domed shape with a dapping block.*

BAIL BENDING JIG



Cullum had this bending jig laser cut from ¼-in.-thick stainless-steel bar. He also had success with one he made from hardwood.

rod. Once all the tapers were shaped, I cleaned up the knobs on the strip sander. I hand-sanded the bails to 400-grit, and polished them with maroon and gray abrasive pads.

Bending and fixing the bails

Then it was off to the bending jig. Hook one knob into the opening and bend the bar over the curve; reverse and repeat. While 3/16-in. bails cold-formed nicely, the ¼-in. ones were a little too stiff to bend tightly to the form, so they needed to be annealed to make them more ductile. To anneal them, I used a propane torch, heated them to cherry red, and then quenched them in water. Quenching steel hardens it, quenching copper makes it softer. After that they bent around the jig beautifully.

Tansu bails are traditionally attached to the drawer front with a metal strip shaped like a cotter pin. The pins are pushed through holes in the drawer face, opened, laid flat, and their pointed tips are driven into the back of the drawer face, not unlike a clinch nail. Having access to solid bronze cotter pins (shoutout to Stoneway Hardware in Seattle), I decided to use those instead of making copper ones.

Cotter pins typically have a teardrop-shaped hole; I made the holes a little rounder by inserting a piece of round bar and then carefully pinching the pin around it with needle-nose pliers. I also sharpened the tips to make them easier to hammer in.

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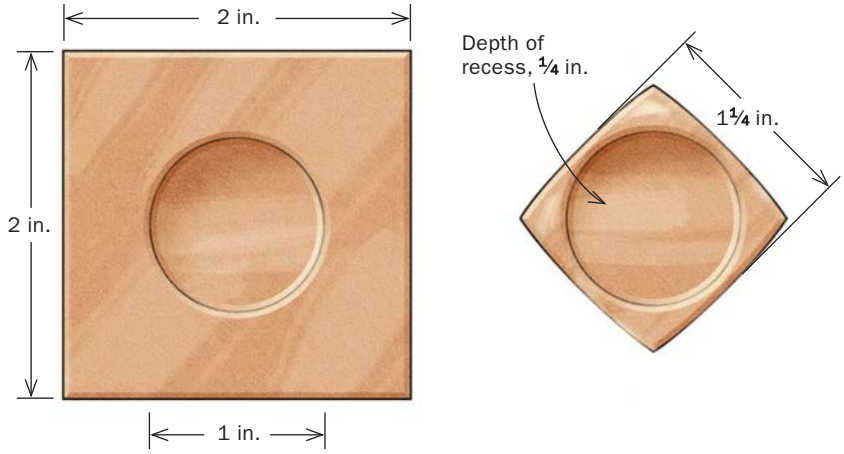

Homemade punch press. *With a sacrificial socket wrench socket and a couple of big washers, Cullum devised a machine to emboss copper sheet for finger pulls. After pounding, he carefully taps out the wrinkles in the skirt around the recess.*

Sweet transition. *After tapping out the wrinkles, Cullum trims the skirt with snips, smooths the edges with a file and abrasives, then polishes all surfaces. He also drills two small holes for nails in the side wall of the recess.*

Before the final installation there was a lot of dry-fitting, checking the movement of the pull, and then several small tweaks to get them to swing freely. I made all these adjustments using a dummy drawer front drilled for the cotter pins.

For the small round escutcheons, I again went to the hardware aisle and found solid copper rivet burrs. They needed to be dome shaped to work as escutcheons, so I used a dapping block and hammered them into shape.

After installing all of the pulls, I hammered a single small nail into the drawer front where the pull would contact the drawer face. This nail, called an atari, protects the wood from being dented by the pull's dropping.

Finger pulls for the doors

Making the recessed door pulls involved a little trial and error (a specialty of mine). In my attempt to make a low-tech punch press, I started out using different sizes and types of wood dowels paired with drilled wood blocks, and I tried different hammering techniques. But the wood just couldn't withstand the folding forces of the copper, and the process left creases in the sides of both the copper and the dowels. Then I arrived at a tooling solution that worked beautifully.

It started with annealing 2-in. squares of copper to get them soft enough to stretch while forming. Without annealing they just crumple and tear. Next I stacked two ⅛-in.-thick, 1-in.-dia. washers on an anvil, waxed both sides of the copper and the end of a ¾-in. socket, and then gave the socket a couple of good whacks. Once the socket reached the anvil, I removed the copper, carefully tapped out the wrinkles on the upper surface, cut it to shape with snips, and sanded over the edges to give it a slightly domed appearance. Lastly, I drilled two nail holes in the walls of the recess and polished the pull with abrasive pads.

Making this hardware was far from cost effective or efficient, but it was worth it. I got what I wanted, and I learned a lot that will inform future projects. □

Len Cullum works wood in Seattle, Wash.

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WOODWORKERS MART

INDEX TO ADVERTISERS

Woodworking, interrupted

BY JON WAYNE BROWN

Five years ago I had a story published here. It was about my late father and the tools he left me. When it came out, I was pushing 40, with a new son of my own and plans to turn my woodworking hobby into a career.

Things were bright. My wife, a doctor, worked full time while I was the primary parent at home. My only complaint, aside from a lack of sleep, was a nagging pain in my right leg. Not surprising, I reasoned. After all, I'd been sitting at home with a baby napping on my lap for hours on end. And I hadn't been for a run in months. I was just getting stiffer with age. To address the issue, I tried physio, weight training, yoga, cross-fit. Nothing really worked, but I soldiered on. I did my woodworking at a maker space where I had a small studio. The room was barely big enough to park one of my first commissions—a dining table for eight in reclaimed fir—but I was on my way to furniture-making riches.

A week or two after I delivered that table something changed. I had been to cross-fit a couple days earlier and decided to skip the box jumps. I just didn't trust my leg. Then, while at home with my son, the pain turned intense. I forced myself to take him for a walk, but I gave up when I couldn't apply the stroller's footbrake. Back in our apartment, I fenced him into our living room with my body and called my wife.

At the emergency room that night, I learned the reason for my leg pain and the sudden spike in it. A malignant tumor had been growing inside my femur. It had just broken through the outer layer of bone, weakening it to the point where one solid impact could have shattered the bone, seeding cancer throughout my body.

I left the hospital in a wheelchair. After a month of doctor's appointments and radiation, I was diagnosed with a rare and extremely fatal lymphoma. Then came four months of what my wife called "hardcore chemo," plus a shiny new rod to shore up what was left of the bone and get me back on my feet.

Luckily, mine was a rare case of a rare disease. At the end of January 2020 I received the all-clear. February was a great month. It was the best month. I had a brand-new outlook on life. Soon I would be back to that woodworking career ...

Then came March 2020. My son, myself, and my depleted immune system moved to my sister-in-law's to isolate from my wife, who was on the frontlines of what would become the COVID-19 pandemic. We all know how that went.

So there were a few minor delays that my business plan didn't account for. I also wasn't sure if, physically, I'd be able to build furniture on the same scale as I'd envisioned. My femur had been repaired, but the tumor had wasted away most of the muscle.

But I worked at it all gradually. Now, after four years of physio and exercise, my leg is nearly back to full strength, and I'm back to moving dining tables. My business is finally growing as well. I have a new, larger space in a well-equipped shop. Commissions are coming in steadily, though finding time for them around my parenting duties can be difficult. Like any entrepreneur, I have my stresses and doubts.

When people hear about my cancer experience, they'll often say, "You must have a brand-new outlook on life." People have expectations of survivors, as if the flick of a switch has led to enlightenment. Cancer didn't give me a brand-new outlook. Cancer's an unredeemable grinch, amongst other things unfit to print. What it does well is steal; but focusing on what's been taken, though tempting, is only detrimental.

I find that telling myself a story helps, so here it is: While I was writing about mourning the loss of my father, my infant son was losing his. My father lived long enough to teach me to use a table saw, build a deck, and be a great dad (fingers crossed). He instilled a love for making that has shaped my life. One-too-many box jumps and it might have all been for naught. I try to remind myself that I've earned a second chance to do the same.

Jon Wayne Brown is a custom furniture maker and father in Vancouver, B.C., Canada. His original column, "Tools from my father," appeared in FWW *#275.*

Photo: Courtesy Jon Wayne Brown

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When Kieran Kinsella chainsaws a 2-ft. length off a log, rolls it into his shop, and hoists it with a gantry crane up onto his lathe, he's thinking, "What can I get out of you? Let's see what's hiding in here." Soon enough, he gets an answer in one of his curved or faceted

The Poetic Stump

stump pieces, stools and tables made with green wood harvested within a few miles of his home in New York's Hudson River Valley. He has worked wood in a variety of other ways—making doors and windows, building cabinets, doing carpentry—but gravitated back toward the reductive, sculptural approach embodied in his early experiences crafting timber-frame joinery and carving canoe paddles. His stump-making tool kit, in addition to chainsaws and a Powermatic lathe modified to accept logs up to 28 in. dia., includes an angle grinder, a power planer, files and rasps, spokeshaves, chisels, and gouges. And a roofing torch. That would be the long-nozzled

device he deploys when he chooses to char one of his stumps. Although he says the charring process leaves him looking like he works in a coal mine, the results on the wood are worth it. "Maple comes out like licorice—deep black, and so smooth; oak looks even more oaky, its end grain contrasty and its ray flecks shimmery and silver-toned." Making the stumps, Kinsella says, is a little like writing haiku. To function as furniture, they need to stand up and have a flat area on top; "but between these two constraints, the only question is, what can I have the most fun carving?"

—Jonathan Binzen

Photos: BDDW (above left and left); Kieran Kinsella (above)